

# COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

MARCH 24, 2003 • VOL. 37 • NO. 12 • \$5/COPY

## Companies Review Their IT Security As War Breaks Out

BY JAIKUMAR VIJAYAN

Tom King, chief information security officer at investment banking firm Lehman Bros., last week was taking a hard second look at his company's IT security and business continuity plans.

As the countdown to war neared its end, King said he remained fairly optimistic that the conflict wouldn't provoke major cyberattacks against U.S. corporate targets. The review, he said, was a precautionary move to ensure that the company's "high-value production systems," network entry points and remote access processes are adequately shielded against random attacks.

*IT Security, page 6*

### COVERAGE INSIDE

The IT community tackles disaster preparedness, project management and offshore outsourcing issues in the face of war. **PAGES 6-8**



## WAR IN IRAQ

# ANTICIPATING THE IMPACT

## Reconstruction Plans for Postwar Iraq Depend on IT

BY DAN VERTON AND MATT HAMBLIN  
WASHINGTON

The State Department and the Pentagon are already working with the private sector to plan for the rebuilding of Iraq's infrastructure, including IT and telecommunications systems.

Under a State Department program known as the Future of Iraq Project, Iraqi exiles with expertise in IT and other disciplines have delivered to the Bush administration studies and recommendations on reconstructing postwar Iraq.

David Staples, a spokesman for the Future of Iraq Project, which was initiated last week, said the project is still in its early stages. *Reconstruction, page 7*

### COVERAGE ONLINE

For updated reporting on the IT impact of the war in Iraq, visit our Web site:

QuickLink a2980  
[www.computerworld.com](http://www.computerworld.com)



WHEN THEY WORK WELL, Web self-service apps offer cost savings for companies and convenience for users. When they don't, customers get frustrated and expenses rise. The keys to success are understanding what users need and building in flexibility. **PAGE 25**

## Know Thy Customer

# Microsoft Changes Tune On Client-only Longhorn

Company now says Windows version that's due in 2005 may be accompanied by server OS

BY CAROL SLIWA  
LAS VEGAS

Microsoft Corp. went to great pains in November to get the word out that its Windows operating system code-named Longhorn would be a client-only release.

But during an interview at last week's Microsoft Management Summit here, Brian Valentine, the senior vice president who heads the com-

pany's Windows division, told *Computerworld* that there may be a new server operating system released with Longhorn, which is now pegged for 2005.

Valentine said support for some of the new client capabilities being enabled in Longhorn, such as richer collaboration and integrated storage, will require infrastructure services on top of the server operating system. How those additions or changes will be packaged and delivered — whether in a service pack, separate download, overlay or new operating system release — has yet to be decided, he said.

"We'll do whatever makes the most sense and is easiest on our customers," he said.

*Longhorn, page 57*

### MANAGEMENT MOVE

Microsoft outlines its response to the autonomic computing plans of IBM, HP and Sun. **Page 12**



# WEB CONTENT UPDATES

→ REPLICATE SITES ACROSS:

- UK
- CHINA
- FRANCE
- GERMANY
- USA

INTRANETS  
INTERNET  
EXTRANETS

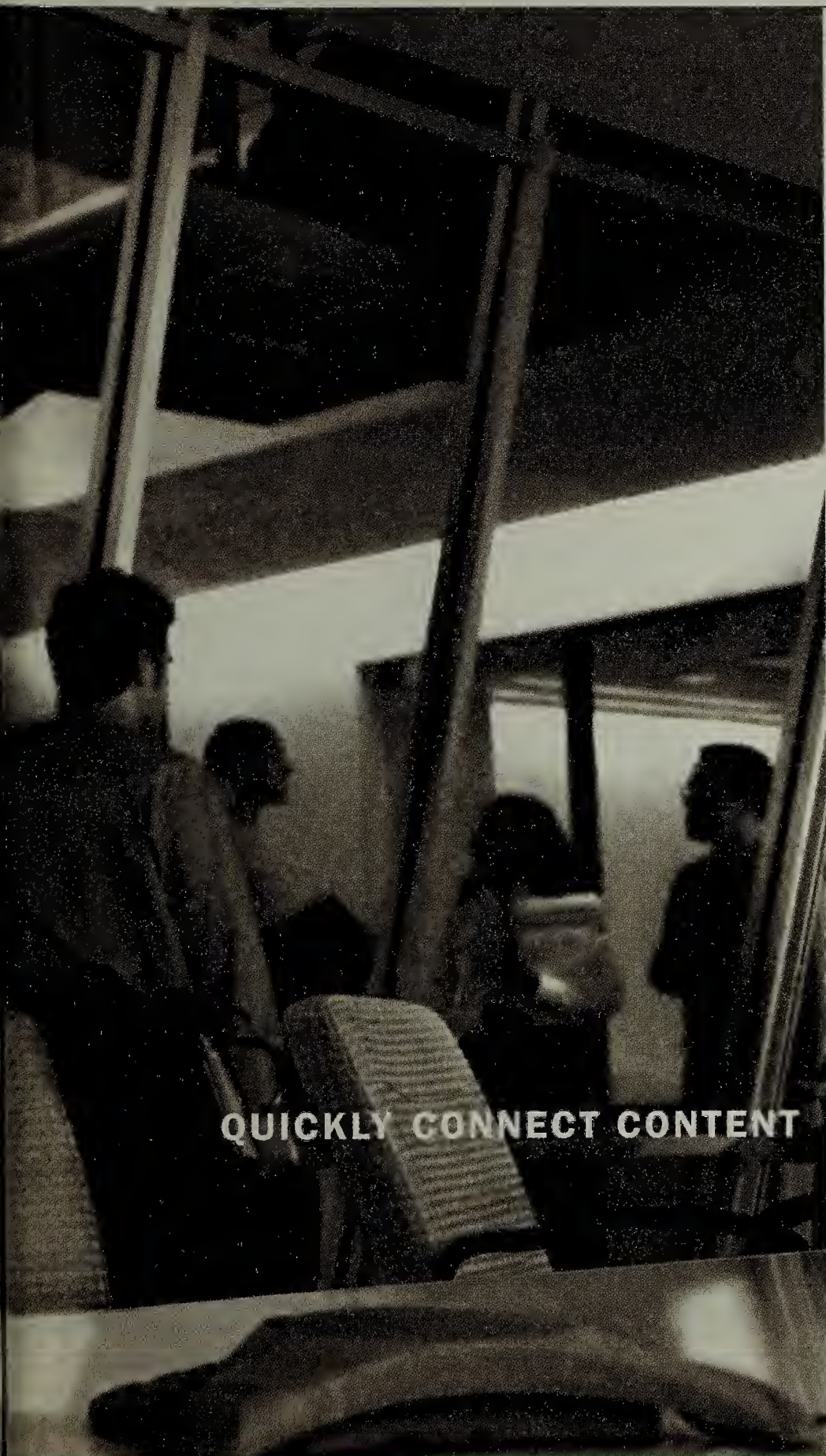
DUE: END  
OF WEEK

→ FOR

- PARTNERS
- BRANCHES

Volvo uses .NET connected software from Microsoft to be an agile business. A premium global brand, Volvo Cars operated sites in dozens of countries. With each country managing its own site locally, their Web sites were inconsistent and changes were difficult to implement. With plans to localize volvocars.com for more than 40 markets, they turned to Microsoft Content Management Server, which let them centralize management of all their sites to ensure uniform branding. Yet it allowed content owners worldwide to quickly update their own sites with local information in their own language. And IT stays contentedly on top of it all.





**QUICKLY CONNECT CONTENT**

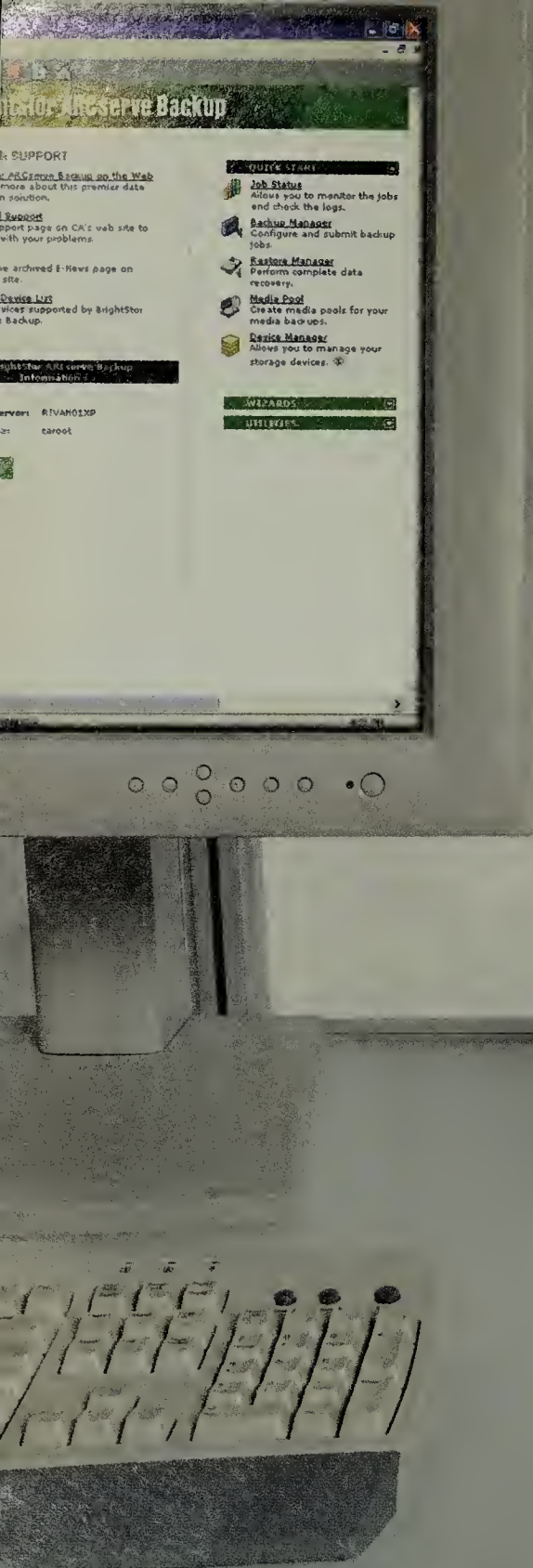


**AND CONTENTMENT.**

**.NET connected software from Microsoft helps you make content management more manageable.** With every change in your business needs come demands for more Web sites, more content, and a faster response from already strained IT resources. To find contentment in this setting, consider Microsoft® Content Management Server. With native support for XML, it integrates with your existing and future applications to create a centralized infrastructure for publishing content to intranet, extranet, and Internet sites. You control site consistency, while empowering content owners to publish their own pages. So, you can be more responsive with fewer resources. And everyone is content. To get a technical overview, visit [microsoft.com/content](http://microsoft.com/content) **Software for the Agile Business.**

**Microsoft**





It's so far forward, it's a shame to call it backup.

**ARCserve v9  
is here**

Apparently the word is out everywhere. BrightStor™ ARCserve® Backup is among the most reliable and widely used backup solutions in the world. In fact, hundreds of thousands of people rely on BrightStor ARCserve Backup technology to protect their critical servers. Now we've created BrightStor™ ARCserve® Backup v9, the most advanced version ever. As part of the BrightStor™ line of storage management solutions, BrightStor ARCserve Backup v9 is amazingly powerful yet one of the simplest to use and easiest to install solutions out there. In fact, most users can perform their first backup within 20 minutes of start-up. And that means it's the perfect backup software choice for, well, just about everyone.

[ca.com/brightstor/arcserve9](http://ca.com/brightstor/arcserve9)



BrightStor™ ARCserve® Backup

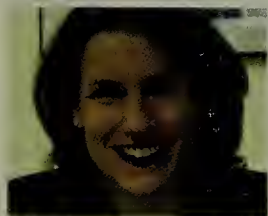


Computer Associates®



# CONTENTS

03.24.03



## NavSea's ROI Ship Comes In.

**In the Management section:** SeaPort, the Naval Sea Systems Command's e-procurement system, has cut the time it takes to acquire professional services from 270 days to less than 45. **Page 46**



## Case Study: Managing the Other 20%.

**In the Management section:** Ingersoll-Rand looks to reap big savings by closely scrutinizing dealings with its smallest suppliers. **Page 39**

## NEWS

### THE WAR IN IRAQ

**6 Companies are confident** about disaster recovery. Technology installed in the aftermath of 9/11 should aid business continuity efforts if the war creates problems.

**6 The U.S. is on heightened** cyberalert as the feds activate Operation Liberty Shield.

**7 Postwar Iraq** may emerge as a big IT market. It has the resources to be a Middle Eastern IT power.

**8 CIOs don't expect** the war to have a big impact on global IT projects. Travel may be curtailed, but Web and videoconferencing are alternatives.

**8 The war may prompt firms** to delay outsourcing their work offshore.

**10 Unisys updates** management software for ES7000 servers.

**12 Microsoft plans to launch** "operationally aware" apps to ease system management.

**14 LAPD seeks a bandwidth** boost from WLAN.

**14 Pentagon investigates** system intrusion involving Windows 2000 security flaw.

**16 i2 aims to simplify** supply chain software.

**16 Fidelity installs SAN** management tool, switching from homegrown application.

## TECHNOLOGY

**25 Know Thy Customer.** Understanding users' needs and building in flexibility are the keys to successful Web self-service applications.

**30 Hands-On Review: Microsoft's Suite Dreams.** Office 2003 has enough new and improved features to tempt IT managers, says Russell Kay.

**32 Future Watch: Smart Dust.** Tiny wireless sensors could change manufacturing, medicine and even the military.

**34 Security Manager's Journal: Insecure Servers Suffer Image Problem.** When server administrators take shortcuts, good security policy and technology can't protect Mathias Thurman's company.

## MANAGEMENT

**42 So You Want to Be a CTO.** What you do in that role depends on who hires you, who you report to and whether you have budget authority.

**44 Q&A: Tap Computers for the "Dog Work."** In the book *Essentials of Supply Chain Management*, Mike Hugos, CIO at Network Services Co., advises readers to leave the critical decisions up to people and the automation to the systems.

**49 Book Review: IT Customers Rule Innovation.** Mark Hall says *Computerworld* columnist David Moschella's new book should send chills down the spines of IT vendors.

## OPINIONS

**10 On the Mark: Mark Hall** learns why Web services aren't moving beyond the firewall, uncovers another victory for Linux and sees 3-D displays in your future.

**22 Patricia Keefe** argues that most ROI analyses are half-baked and explains why yours doesn't have to be.

**22 Pimm Fox** suggests that P2P technology is more than just cool for kids. It can be a serious tool for IT as well.

**23 Daniel J. Weitzner** points to a recent jury decision that shows the flaws in the Digital Millennium Copyright Act.

**36 Tommy Peterson** says self-service application vendors take the wrong lessons from the history of the ATM.

**50 Peer To Peers: Ten Ways To Increase Your IT Value.** Lesson No. 1: Execution is everything, so don't get embroiled in endless analysis, writes guest columnist Matthew Krieger of Reader's Digest.

**58 Frankly Speaking: Frank Hayes** worries that your staff might be suffering from burnout, then worries again that you might treat all burnout cases the same.

## DEPARTMENTS/RESOURCES

At Deadline Briefs .....10  
News Briefs .....12, 16  
Letters .....23  
Company Index .....56  
How to Contact CW .....56  
Shark Tank .....58

## ONLINE

WWW.COMPUTERWORLD.COM

### How to Secure Your Systems Now

**SECURITY:** The war against Iraq will likely trigger an increase in international hacker attacks. There are steps you can take to reduce your exposure. **QuickLink 37112**

### IT Salaries Hold On

**CAREERS:** Meta Group's Maria Schafer, in her debut as a *Computerworld.com* career columnist, concludes that IT salaries and raises are faring better than those for non-IT jobs. **QuickLink 37187**

### Should You Kill Your Project?

**MANAGEMENT:** Do you know when it's time to pull the plug on a project? Columnist Paul Glen tells you what you need to think about when making that decision. **QuickLink 37092**

### Managed C# vs. Unmanaged C++

**DEVELOPMENT:** Which is faster? The answer may surprise .Net enthusiasts. **QuickLink 37003**

### Keeping Blended Threats at Bay

**SECURITY:** David Aylesworth of eSoft examines a new generation of Internet worms and what you can do to defend your networks against them. **QuickLink 37050**

### Review: PowerBook 17

**MACINTOSH:** We get our hands on one of Apple's superwide PowerBook 17 laptops and find that it's more of a portable desktop than a machine for road warriors — unless you have a large lap. **QuickLink 37185**

### What's a QuickLink?

On some pages in this issue, you'll see a QuickLink code pointing to additional, related content on our Web site. Just enter that code into our QuickLink box, which you'll see at the top of each page on our site.

### ONLINE DEPARTMENTS

Breaking News

QuickLink a1510

Newsletter Subscriptions

QuickLink a1430

Knowledge Centers

QuickLink a2570

The Online Store

QuickLink a2420



# Global Firms Confident About Disaster Recovery

## Post-9/11, many businesses feel better prepared

BY LUCAS MEARIAN

**S**EVERAL LARGE companies last week said they're now better prepared for IT disaster recovery work that may be required as a result of the war with Iraq, thanks largely to investments they made after the Sept. 11, 2001, terrorist attacks.

For example, Loews Corp., a New York-based holding com-

pany that owns businesses in industries such as insurance, travel and offshore drilling, has been building up the end-user access capabilities on its corporate intranet as part of a business continuity plan that was put in place last year.

In part because of 9/11, Loews has deployed multiple remote access points through authentication servers and virtual private networks, said Al Alexander, manager of Loews' information center. Those steps include the installation of a secure access system

called e-Gap, developed by Whale Communications Inc. in Fort Lee, N.J.

"If there was a reason our building was incapacitated — if there was a chemical attack, where people couldn't get to work — communications and intranet-based applications could still function from any machine in the world," Alexander said.

Wendall Fox, a CIO at a global company in the hospitality industry, said his business unit made sure that its business continuity plans

were up to date before the war began in Iraq.

"We've learned from 9/11 that we have to be ready," said Fox, noting that his company lost a hotel when New York's World Trade Center was destroyed. "I think that we've taken all the precautions necessary. [But] certainly, one can't predict what might happen."

Chicago-based brokerage Bright Trading LLC last year expanded its redundant data-backup systems and communications networks in response to the 9/11 attacks. "We have backups of data in our headquarters and maintain auxiliary backups in Chicago and New York," said director of education Don Bright. "We could switch over to any of our trading floors in the event that one went down." ▀

Continued from page 1

## IT Security

Last week, IT executives at companies contacted by *Computerworld* said they were reviewing their security and disaster preparedness plans even as they held out hope that disruptions would be minimal.

"If history is any guide, I don't expect any tremendous amount of cyberterrorism being focused on us now," King said. "We just want to make sure that we are not in any way vulnerable to casual or simple attacks."

The biggest threat will come from "politically motivated, low-level cyberattacks" aimed at "targets of opportunity," according to a report released by Stamford, Conn.-based Gartner Inc. in February. Such attacks will be designed to disrupt operations and vandalize Web sites with political messages, the report stated.

### Contingency Plans

Still, most U.S. corporations aren't expecting a major business disruption from the war in Iraq, though a majority of companies have global IT contingency plans in place, according to the results of a survey of 60 companies released

last week by Boston-based AMR Research Inc.

One such company is Betts USA Inc., a Florence, Ky.-based manufacturer of tubes and injection-molded components with operations in several countries, including Indonesia, India and China.

Like Lehman, Betts is going over its defenses with a fine-toothed comb, making sure that its firewalls are properly configured, that virus definitions and software patches are fully updated and that proper tape backup processes are in place.

The company also has plans to get in touch with its hardware distributor to make sure spare equipment is available if it's needed, said Dennis Roell, IT manager at Betts. Physical security, facilities access and disaster recovery processes are being reviewed at all plants, and Betts is getting in touch with its Internet service provider to review its security and contingency plans as well, Roell said.

"It's all of the same stuff that went into the Y2k preparation," he said. "We are just reaffirming everything we have done to make sure we have indeed thought this through."

"In terms of IT security, we continue to focus on business

## GUARDING AGAINST WAR-PROVOKED CYBERATTACKS

**Evaluate and test personnel security**, including background checks, access to facilities and interaction with electronic systems.

**Provide multiple communication methods** for computer incident response teams and all critical personnel.

**Update all systems with current security patches.** Update virus signatures daily.

**Initiate vulnerability assessments**, including penetration testing.

**Monitor security distribution lists** for the latest updates and trends.

**Review external service providers' security readiness.**

SOURCE: GARTNER INC., STAMFORD, CONN.

continuity for key systems and heightened vigilance for political hactivism," said Bill Smathers, director of enterprise security services at Avnet Inc., a \$9 billion technology distributor in Tempe, Ariz., that has customers in 63 countries.

"Physical security is the most immediate focus. Avnet

has a limited presence in the Middle East, and our highest priority would be the safety of our employees within the military theater of operations," Smathers said. The company has formed an emergency response team that includes key functions such as IT, corporate communications, quality assurance, transportation and travel, he said.

"All have plans in place to keep business interruptions to a minimum in the event of a crisis," Smathers said, declining to elaborate.

In some cases, previous preparations are paying off. All of Royal Caribbean Cruises Ltd.'s ships have been operating at the "highest level of security alert" since the attacks of Sept. 11, 2001, said Tom Murphy, CIO at the Miami-based company.

According to Murphy, Royal Caribbean is the first cruise company to be ready with the Advanced Passenger Information System, an electronic passenger-tracking system mandated by the U.S. Department of Homeland Security [QuickLink 35467]. As a result of such measures, "we don't have any specific concerns relative to IT security" stemming from the Iraq crisis, Murphy said. ▀

## NATION ON HEIGHTENED CYBERALERT

### Feds Activate Operation Liberty Shield

BY DAN VERTON  
WASHINGTON

The Department of Homeland Security (DHS) is asking all Americans, especially businesses and operators of critical infrastructure, to report any suspicious cybersecurity incidents or intrusions, as part of a nationwide action plan code-named Operation Liberty Shield.

"We ask the private sector and general public to report unusual activity, such as intrusions, hacking, probes and such, to us via the National Infrastructure Protection Center Web site or the FBI," said Dave Wray, a spokesman for the DHS. "We are increasing monitoring of the Internet, contact with our Information Sharing and Analysis Centers [ISAC], Internet service providers and the Internet security industry."

Secretary of Homeland Security Tom Ridge activated Operation Liberty Shield on March 18, soon after President Bush issued Saddam Hussein an ultimatum to leave Iraq or face military action.

"We will continue to monitor the Internet for signs of a potential terrorist attack, cyberterrorism, hacking and state-sponsored information warfare," said Ridge. The Department of the Treasury has also increased its monitoring of the nation's financial networks and payment systems, Ridge said.

Shortly after Ridge activated Liberty Shield, DHS held a teleconference to clarify specific threat data with the various private-sector-run ISACs. ISACs expedite information-sharing between the private owners of critical systems and the government. ▀



# Postwar Iraq May Be Big IT Market

Country has financial, educational resources to be Middle Eastern IT power

BY PATRICK THIBODEAU  
WASHINGTON

Even before the first missiles were launched at Baghdad last week, Iraq's IT infrastructure was primitive, a result of years of war and economic sanctions. But if Iraq emerges from the showdown with the U.S. as an open society, it could become a major technology market for U.S. companies.

"Every business-minded person is looking at Iraq after the war because it is a very rich country," said Riad Safar, director of Middle Eastern and North African operations at enterprise systems vendor Stratus Technologies Inc. in Maynard, Mass. "The needs are tremendous."

Stratus expects to focus on

a horizontal market instead of vertical segments because it sees ubiquitous need for its systems in Iraq after any military actions have ended.

Safar said he believes Iraq's market potential, as it moves to replace out-of-date business and health systems, is bigger than that of many of its neighbors, including Jordan, Lebanon, Egypt, the United Arab Emirates and perhaps even Saudi Arabia.

Adel Ahmid agreed. The senior official at Kuwait-based systems integrator International Turnkey Systems said in a telephone interview last week that he thinks Iraq will be a "huge" market.

Turnkey Systems is a Sun Microsystems Inc. partner.

Iraq currently has limited technology resources, said

Ahmid. "It's like an empty place; you have to fill it out," he said.

One measure of Iraq's technological isolation is Internet use. Austin, Texas-based Matrix NetSystems Inc., which measures Internet performance, said that although the number of Internet hosts worldwide exceeded 200 million last year, there are none in Iraq. Moreover, there is only one domain with the Iraq country code of .iq, and it's registered in the United Arab Emirates.

Much remains uncertain. One U.S. Department of Commerce official pointed out that Iraq's potential will "depend on the nature of the post-Saddam regime, its openness and tolerance."

Less-open regimes have proved less adept at integrating IT and communications infrastructures. Moreover, no one knows whether Saddam

Hussein will act in ways that could make rebuilding the nation difficult, such as damaging oil wells or using radiological, chemical or biological weapons.

While the war naturally raises questions about the Middle Eastern country's future, Iraq has the population and wealth to finance an IT upgrade. It is about the size of California and has a population of 24 million, a literacy rate of nearly 60% and vast oil reserves.

"There does promise to be a limited bonanza [for IT companies] in the longer term," said Dan Miklovic, an

analyst at Gartner Inc. in Stamford, Conn. Iraq relies on no-name PC clones, and export restrictions have kept it from buying enterprise servers from U.S. firms, he said. Much of its software is several releases old, Miklovic added, and the country is "heavily dependent on pirated software."

The potential financial impact on U.S. firms is hard to gauge. Bill Wyman, an analyst at Washington-based The Precursor Group, which advises institutional investors, said the needs of Iraq aren't likely by themselves to make a meaningful difference to the bottom lines of large vendors.

But if U.S.-subsidized IT spending in Iraq were to hit \$5 billion initially, that — coupled with U.S. government IT spending, which Precursor expects to rise by 15% next year from roughly \$50 billion in 2003 — "is substantial enough to matter," he said. ▀

**Every business-minded person is looking at Iraq after the war.**

**RIAD SAFAR, director of Middle Eastern and North African operations, Stratus Technologies Inc.**

Continued from page 1

## Reconstruction

ated in October, said 17 working groups have been established, including an economics and infrastructure group focused on IT infrastructure and telecommunications requirements.

Rubar Sandi, a member of the infrastructure working group, fought in the Kurdish revolution in 1974 and now owns an investment bank in Washington. Based on information provided by people inside Iraq, Sandi estimated that the cost of modernizing Iraq's data and voice networks would be between \$1 billion and \$1.5 billion and that it would take six to eight years to complete.

"It could definitely go much faster," said Sandi. "But nobody really knows exactly how to assess the infrastructure without knowing what the damage will be. So we analyzed everything as is."

Ahmed Al-Hayderi, a member of the infrastructure working group who defected from Iraq in 1980, works for a global telecommunications firm in the U.S. According to Al-Hayderi, the community of 4 million Iraqi exiles includes many senior corporate executives from technology companies that are eager to invest in Iraq and assist in the rebuilding.

"There is significant infrastructure available in the military sector," said Al-Hayderi, adding that the working group is concentrating on how to leverage that infrastructure to "leapfrog to a cost-effective deployment of a fully ubiquitous telecommunications infrastructure throughout Iraq."

Similarly, the U.S. Department of Defense is engaged in planning for the IT and telecommunications requirements of occupation forces that can serve as a framework for a more permanent infrastructure for postwar Iraq.

A spokesman for the Defense Information Systems

Agency (DISA), the Pentagon's central network systems provider, said the agency has already contracted for significant commercial information systems support.

Although the spokesman declined to name companies that will be involved in the work, he said some of the contracts are focused on provid-

ing OC3 terrestrial connections throughout the region. DISA plans to rely on commercial contractors "to the maximum extent possible" and will bring them in once planning for a postwar communications infrastructure is complete, the spokesman said.

The Pentagon has a history of using commercial firms to provide critical telecommunications and IT support during and after military operations.

For example, Sprint Corp. was the principal U.S. contractor for building the physical infrastructure for voice and data networks in Bosnia in the late 1990s after the war there. Sprint is now in informal talks with military and civilian agencies about building a voice and data infrastructure in Iraq after hostilities subside, Sprint spokesman Steve Lunceford said last week.

Natasha Haubold, a spokeswoman for WorldCom Inc., said WorldCom has an extensive list of federal contracts and is "always working with

[the government] closely ... to discuss current and future needs," which would include those associated with U.S. involvement in Iraq.

Also certain to be affected by the Iraq war is Paris-based Alcatel, a major networking vendor with operations in 130 countries. It was designated by the United Nations to provide basic telecommunications services in Iraq at the end of Operation Desert Storm in 1991, said Mark Burnworth, an Alcatel spokesman. Alcatel has since received contracts worth \$85 million for reconstruction of telecommunications infrastructure in Iraq, all approved by the UN's Oil for Food Committee, Burnworth said.

Nortel Networks Ltd., meanwhile, hasn't made any business plans for postwar Iraq.

"We're much more concerned with the outcome of the war than whether there's a profit for us at this stage," said Malcolm Collins, president of Nortel's Enterprise Networks division. ▀

### IRAQ'S COMMUNICATIONS INFRASTRUCTURE

Population: 24 million

ISPs: One (state-controlled)

Internet users: 12,500

Telephone lines: 675,000

Telecommunications network:

Domestic: Coaxial cable and microwave radio relay links.

International: Satellite earth stations — two Intelsat, one Intersputnik, one Arabsat (inoperative); coaxial cable and microwave radio relay to Jordan, Kuwait, Syria, Turkey.

SOURCE: CIA



# CIOs Don't Expect War to Have Major Impact on Global IT Projects

Travel could be a problem, but Web and videoconferencing seen as alternatives

BY THOMAS HOFFMAN

**A**LTHOUGH CIOs interviewed last week said they're deeply concerned about the potential business impact of the war with Iraq, few foresee any significant effect on international IT projects that are under way or in the pipeline.

But some IT executives warned that that could change if the war causes travel problems for their companies' employees or customers.

For example, Cardinal Health Inc. in Dublin, Ohio, is working on multiple enterprise resource planning (ERP) projects "that may experience travel-related impacts to their schedules," said Richard Gius, the medical equipment supplier's senior vice president of IT.

The projects most at risk are those that require consultants or other external workers to travel from country to country, Gius said. IT projects contained within individual countries on any of the five continents where Cardinal has operations should see little impact from the war, he added.

Mark Hedley, senior vice president and chief technology officer at Wyndham International Inc., said the Dallas-based operator of hotels and vacation resorts doesn't have any major IT projects in the works in the U.S. or internationally that are likely to be adversely affected by the war.

However, Hedley added that if the war continued for more than a week or two and adversely affected the travel industry, Wyndham would have to make adjustments to shore up its business. "I'm most concerned with domestic air travel and lack of passenger activity," he said. "Airlines are feeders to our hotel markets."

MasterCard International

Inc. doesn't expect the Iraq conflict to affect any of its international projects, including an ongoing conversion of its European systems to its global IT architecture, said Jerry McElhatton, president of global technology and operations at the credit card company's data center in O'Fallon, Mo.

If international travel disruptions do arise, Purchase, N.Y.-based MasterCard plans to expand its use of teleconferencing, McElhatton said. Teleconferencing technology "is not always a suitable alter-

native" to travel, but it can facilitate communications when necessary, he noted.

Three of MasterCard's IT staffers have been called up to active military duty, and a few more could follow. But McElhatton said he hasn't had to replace anyone with interim contractors, nor has he had to create internal work-arounds to support MasterCard's operations.

There are signs that the uncertainties preceding the war affected IT spending. For example, Oracle Corp. last week reported a 4% decline in sales of new software licenses for its third quarter, which ended

## MANAGING INTERNATIONAL IT PROJECTS DURING WARTIME

If travel is restricted, use video, telephone and Web conferencing technologies to coordinate project teams.

Evaluate potential supply chain problems, including whether vendors will be able to deliver products on time.

Keep IT staffers busy and focused on their jobs to prevent them from being distracted by the war.

Feb. 28. Jeff Henley, Oracle's chief financial officer, said the looming war led corporate users to hold off on purchases last month after business was relatively strong in December and January.

Unisys Corp. has already completed the bulk of a global rollout of Oracle's ERP applications and Siebel Systems Inc.'s customer relationship management software, with the exception of putting some final touches on an ERP implementation in Latin America. "So a great deal of our heavy lifting is behind us," said John Carrow, CIO at the Blue Bell, Pa.-based IT vendor.

Like many other companies, Unisys has cut back on corporate travel because of the weak economy and is now "very adept" at conducting IT-related business via teleconferences, videoconferences and the Web, Carrow said. ▀

## War May Prompt Firms To Delay Offshore Work

BY PATRICK THIBODEAU  
WASHINGTON

The Iraq war's impact on offshore outsourcing could be similar to what happened last year during the crisis between Pakistan and India, when for several months there was a decline in offshore contracts and a renewed focus on contingency planning. Once the threat declined, outsourcing to India largely returned to normal.

But if the Iraq war is protracted and U.S. interests, such as India's outsourcing centers, are attacked by terrorists, then U.S. businesses will likely pull operations back in-house, said Debashish Sinha, an analyst at Gartner Inc. "There is an infinite number of variables that could affect this," Sinha said.

Meta Group Inc. last month predicted that offshore outsourcing would grow 20% annually, and Dean Davison, an analyst at the Stamford, Conn.-based firm, said he's not expecting that growth rate to be "significantly hindered" by the war.

But Davison, who canceled a trip to India he was planning to take this week, said his forecast

could change if the war prompts global unrest. "If this expands... then all bets are off," he said.

The war is already having a short-term impact on outsourcing, primarily because of travel concerns.

For instance, Telvista Co., an Austin, Texas, firm that provides offshore services in Mexico, decided to reschedule a conference planned this

week in San Diego after numerous clients canceled travel plans because of the war. "There's a reluctance to travel, even in the U.S.," said Suzy Weaver, Telvista's vice president of operations.

But analysts expect businesses to continue with their longer-range offshore planning, if warily.

Baltimore-based investment management firm T. Rowe Price Group Inc., which manages more than \$140 billion in assets, does a significant amount of its new-application development, platform rehosting and application management work via an India-based outsourcing firm. The war so far has not affected its overseas work, said Ram Mouli, the company's vice president of technology planning and development.

"The challenges during a war-type emergency are the issues related to travel from and to India by the on-site resources," Mouli said. But future projects that are under consideration, such as application hosting and the setting up of a disaster recovery

site in India, may be reconsidered. "We are re-evaluating these projects, as we are worried about the war and the long-term effect on system and application access," Mouli said.

Marty Clague, president and CEO of Covansys Corp., a Farmington Hills, Mich.-based company that provides offshore services in India, said he expects some trip cancellations and deferrals in offshore work. But being ready for problems is part of offshore planning, he said.

Covansys has server farms in the U.S. connected to centers in India that routinely back up data and could be used to transfer projects. The firm also has employees in India who have visas and are ready to travel to the U.S. in the event of an emergency, said Clague. ▀

Reporter Jaikumar Vijayan contributed to this report.

## FINE PRINT

Companies should make sure they're protected in their outsourcing contracts:

 QuickLink 37213  
www.computerworld.com

**There's a reluctance to travel, even in the U.S.**

SUZY WEAVER, VP of Operations, Telvista Co.



# If you're busy monitoring your servers, who's watching your business?



## The new HP ProLiant DL740 8-way with hot-plug RAID memory.

- Ultradense 4u modular chassis with up to eight Intel® Xeon™ MP 1.5 GHz or 2.0 GHz processors
- Up to 64GB addressable memory
- Groundbreaking F8 chipset
- 6-64 bit/100 MHz PCI-X slots
- Integrated Lights-Out Standard (iLO) for Remote Server Mgmt.



## The new HP ProLiant DL760 G2 8-way with hot-plug RAID memory.

- Up to eight Intel® Xeon™ MP 1.5 GHz or 2.0 GHz processors
- Up to 64GB addressable memory
- Groundbreaking F8 chipset
- 10-64 bit/100 MHz PCI-X, 1-64 bit 33 MHz slots
- Remote Insight Lights-Out Edition II (optional) for Remote Server Mgmt.

What challenges do you face today? Decreasing budgets? The lurking possibility of downtime? It's hard enough to focus on moving your business forward when you're constantly looking over your shoulder to see if everything is up and running.

Besides, that's the job of the new HP ProLiant DL700 series running Intel® Xeon™ MP processors. An adaptive infrastructure begins with these HP ProLiant servers which come equipped with tools that predict, self-diagnose and fix many fault conditions. And now with hot-plug RAID memory exclusively from HP, you can add or replace DIMMs without turning your systems off. Both work with the HP ProLiant Essentials Foundation Pack featuring Insight Manager 7 software which monitors and controls your infrastructure for maximum uptime.

At the end of the day, you'll have more control over your infrastructure, help avoid unplanned downtime and reduce overall maintenance costs. Not to mention freeing yourself up for more important things.

**To learn how HP ProLiant servers can be a part of maximizing your company's uptime, download CMP's executive brief on high availability at [www.hp.com/go/proliant85](http://www.hp.com/go/proliant85) or call 1-800-282-6672, option 5, and mention code YPH.**





## AT DEADLINE

### EDS Replaces Its Top Executive . . .

Electronic Data Systems Corp. said that Dick Brown has stepped down as chairman and CEO of the embattled IT services vendor. Plano, Texas-based EDS has replaced Brown with Michael H. Jordan, who retired as CBS Corp.'s CEO in 1998. EDS also said that Jeffrey Heller, who left the company in 2000 after 34 years there, has returned to serve as its president and chief operating officer.

### . . . And Loses User Certegy to IBM

Certegy Inc. in Alpharetta, Ga., said it severed a U.S. IT services contract with EDS and signed a 10-year deal with IBM. The new pact is valued at \$150 million and adds to agreements under which IBM does IT services work for Certegy in the U.K. and Australia. Certegy, which provides credit and debit processing services, said it will take a charge of up to \$10 million to cover early-exit payments to EDS.

### Palm Reports Q3 Loss, Sales Drop

Palm Inc. reported a \$172 million loss for its third quarter, which ended Feb. 28, as revenue fell 29% from the year-earlier level to \$209 million. Milpitas, Calif.-based Palm said fourth-quarter revenue will likely be down between 15% and 20% year over year. It added that it's delaying a planned spin-off of its Palm-Source Inc. operating system unit from midyear to late summer.

### Survey Cites IT Burnout Problems

Meta Group Inc. this week plans to release the results of a survey in which 71% of the 668 IT managers it questioned said employee burnout is a serious issue at their companies. (See Frankly Speaking, page 58.)

MARK HALL ■ ON THE MARK

## Web Services Remain Behind Firewall . . .

. . . and probably will stay there for the next year or longer. Or so say vendors and developers who work in the field. **Everything from immature standards to security concerns** seems to be holding Web services in check, they say. "It's an immature field, and the standards are still evolving," observes James Franklin, director at Extreme Logic Inc. in Atlanta. He says only 10% to 20% of the clients of his 200-person IT consultancy are dipping their toes into Web services, and they're

doing so only for internal integration work. "Most of our customers are not ready for depending on outside Web services," he says, noting that **users are unnerved by the fact that new standards "will always crop up,"** such as the recent announcement of one for Web services management. Keith Franklin (no known relationship to James), president and chief software architect of Empowered Software Solutions Inc., a .Net consultancy in Burr Ridge, Ill., claims that while effective security is possible with Web services, people remain skeptical "because it's not part of the specification."

■ Mercury Interactive Corp. has leapt into the Web services tools business. But according to Vincent Rerolle, vice president of business development, the Sunnyvale, Calif.-based software company has seen virtually all the demand focused on testing tools, which leads

him to conclude users aren't deploying these new applications outside their companies because that would require a different set of production and management tools. Part of the problem resides in the issue of responsibility. For example, service-level agreements (SLA) are well defined and managed among current

business-partner applications. "But," Rerolle says, **"SLAs are still nascent on the Web services side."** ■ If you're ready to experiment with Web services, but all you hear from management is **"ROI! ROI! ROI!"** Franklin (James, not Keith) argues that .Net is the hands-down winner on cost to deploy, primarily because of Microsoft Corp.'s stronger development tools. Still, he acknowledges that if you already have a Java 2 Enterprise Edition (J2EE) environment, switching to .Net is unlikely to deliver meaningful returns on investment. If you want to

jump into the .Net vs. J2EE Web services debate, visit [www.webservicesarchitect.com/](http://www.webservicesarchitect.com/) and join the fray. ■ **That fray going on in Iraq** has affected the Franklin boys differently. One (James) attributes the hesitation about corporate IT buying decisions to the lingering uncertainty of war. However, he says, "if the war is quick, there could be a bit of a bounce in business." The other (Keith) says the war with Iraq hasn't changed his software consulting business at all. "I haven't heard a peep from one of our clients," he says. "They're not even asking for extra security screening of our on-site staff."

■ However the war affects IT business, one thing you can bet on is that **Linux will emerge victorious.** Research from Evans Data Corp. shows that 52% of developers now target the open-source operating system to run their software. And Linux will get another boost next week when Austin, Texas-based Metrowerks, a wholly owned subsidiary of Motorola Inc., unveils its Smart Gateway 857 hardware/software development combo for large network systems such as switches and routers. The new development tools will put Linux inside systems that previously depended on proprietary operating systems. Reason? Operating system licensing fees are too steep. **The 857's evaluation and developer kits are available now.** Expect to see a voice module for voice over IP developers by June. ■ **No foolin', computer games will make 3-D displays ubiquitous,** according to Joel Pollack, vice president for business development at Sharp Microelectronics of the Americas in Camas, Wash. He claims that the phenomenon will begin with 3-D games on cell phones in Japan this year and help drive down costs to the point that, within the next couple of years, IT managers at medical and R&D sites will need to bone up on 3-D displays. And you thought flat panels would be the end of it. ■

### Not Windows

**Apple Computer Inc. will ship its upgraded Xserve Unix-based 1U servers in late April. The new machines include single or dual 1.33-GHz Power PC processors, up to 720GB of mass storage and a 10-client Mac OS X license for \$2,799. . . . Linux lovers who are spam haters will appreciate Cybernet Systems Corp.'s announcement this week that it's adding SpamBouncer to its NetMax Professional Suite, a preconfigured Linux server environment. The add-on costs \$100.**

## Unisys Updates Server Sentinel Software

BY TOM KRAZIT

Unisys Corp. today is releasing the newest version of its server management software, along with new software that manages applications on its data center servers.

Server Sentinel 2.0 will be bundled with the company's ES7000 series servers, which use eight to 32 Xeon processors or 32 Itanium processors from Intel Corp. The software is designed to ease systems administration through self-

management and self-healing features, said Jon Burns, director of Sentinel programs at Blue Bell, Pa.-based Unisys.

The software was developed to detect hardware failures before they happen and prevent those failures from cascading around a network, Burns said. Server Sentinel will determine what conditions might lead to a specific problem and direct traffic on a network to fail over to the "best fit" node based on that

specific problem, he said. This will allow systems administrators to isolate and repair failures without losing the entire network, Burns added.

Unisys today is also releasing a product called Application Sentinel in three versions: Application Sentinel for Resource Management, for Consolidation and for Microsoft's SQL Server.

The consolidation module allows companies to run the same applications on fewer

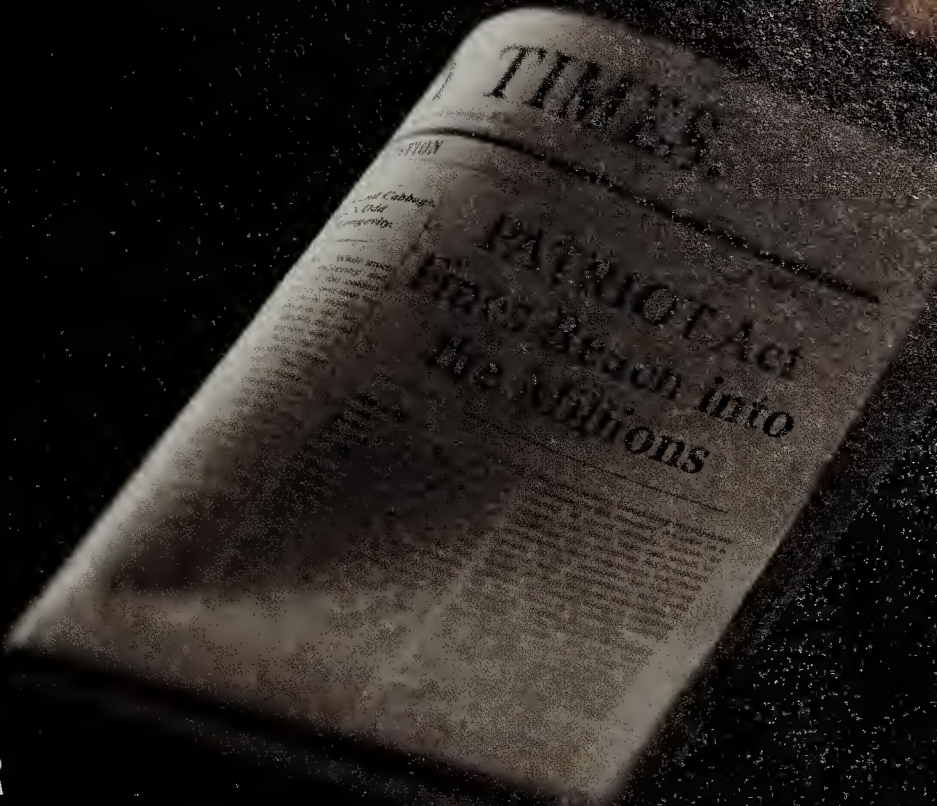
servers by doing an inventory of existing server resources and analyzing how to best distribute the load, Burns said.

The software is available with ES7000 servers, which start at about \$100,000 for an eight-way configuration, Burns said. However, Unisys also plans to launch a new ES7000 server in the next few weeks at a much cheaper price, he said. Pricing hasn't been finalized for the new product. ■

Krazit writes for the IDG News Service.



PATRIOTcompliance Solution



## COMPLIANCE OR CONSEQUENCES.

The consequences of USA PATRIOT Act non-compliance are substantial. Enormous fines are being imposed that range in millions of dollars. Not to mention the added scrutiny and negative publicity. It's clear you don't want to be next.

Nor do you have to be.

Our PATRIOTcompliance Solution integrates your existing customer and transaction information systems into a consolidated compliance system that not only detects unusual activity, but also automates its investigation and its resolution in a timely, secure, and meticulously documented manner.

USA PATRIOT Act compliance is just one example of how Sybase is helping today's enterprises achieve Information Liquidity: a highly profitable state where all your information is transformed into real economic value.

For product details, visit [sybase.com/patriotsolution](http://sybase.com/patriotsolution).

INFORMATION LIQUIDITY.



SYBASE INTEGRATION TECHNOLOGIES.  
EVERYTHING WORKS BETTER WHEN EVERYTHING WORKS TOGETHER.™



## BRIEFS

Oracle Up in Q3,  
But Sales Droop

Despite lower sales of new software licenses and a decline in its IT services business, Oracle Corp. reported year-over-year increases in revenue and profits for its third quarter. Revenue totaled \$2.31 billion in the quarter that ended Feb. 28, up 2% from a year ago as a result of increased user spending on software updates and product support contracts. Oracle said profits rose 12% to \$571 million.

Huawei Rejects  
Cisco's Claims . . .

Huawei Technologies Co., a networking vendor in Shenzhen, China, responded to charges of patent infringement and technology-copying that Cisco Systems Inc. lodged in January. In a filing to the U.S. District Court in Marshall, Texas, Huawei denied many of Cisco's claims and challenged its legal standing to bring others.

. . . And Inks Sales  
Deal With 3Com

Huawei and Santa Clara, Calif.-based 3Com Corp. said they're forming a joint venture to develop and sell networking products. 3Com is investing \$160 million in the Hong Kong-based joint venture and will initially hold a 49% interest, with Huawei owning the rest. The joint venture will sell its products in China and Japan, and 3Com will sell them under its own brand in the rest of the world.

## Short Takes

The Kerberos development team at MIT warned of "critical" cryptographic shortcomings in Version 4 of the end-user authentication protocol. It added that details of the flaw have been leaked on the Internet. . . . **GATEWAY INC.** in Poway, Calif., said it's cutting 17% of its workforce. The company also said it will launch new corporate servers next month.

Microsoft Plans Move  
To Autonomic Territory

Initiative to make 'operationally aware' applications should ease management

BY CAROL SLIWA  
LAS VEGAS

**M**ICROSOFT CORP. last week took the occasion of its annual Management Summit to lay out a long-term vision to help IT shops simplify and automate their operations and manage and monitor their systems.

Company executives introduced a Dynamic Systems Initiative (DSI) that aims to simplify the design, development and deployment of applications that are "operationally aware." IT professionals will gain the flexibility to expand and contract hardware and software resources based on business logic and automate operations, said Bill Veghte, vice president of the Windows Server Group.

The Dynamic Systems Initiative essentially is Microsoft's belated, but much needed, response to the autonomic computing plans that IBM, Hewlett-Packard Co. and Sun Microsystems Inc. are promoting for self-healing, self-configuring and self-optimizing systems, analysts said.

## Major Differences

But Microsoft's initiative differs from the competition's plans in two major ways. The Dynamic Systems Initiative focuses on Microsoft products, whereas the competing initiatives better account for the heterogeneous systems found in large data centers, according to analysts.

Another difference is Microsoft's focus on designing systems that are "operationally aware" from the outset. Microsoft is creating an XML-based System Definition Model (SDM) to define and capture the resource, operational and deployment re-

quirements of an application.

The initial incarnation of the SDM is due in 2005 with the Windows release code-named Longhorn, Microsoft officials said (see related story, Page One). Plans call for the SDM to eventually be baked into Microsoft products and development tools, so that any Windows-based application a customer buys or builds can be managed, provisioned and adapted more easily as workload or business needs change.

Michael Niehaus, an IT consultant at Marathon Oil Corp. in Houston, said the SDM concept looks interesting,

but he said he doubts that it will be viewed as a top priority at his company.

"At this point in time, that entire concept would be lost on most of our developers," he said. "Our developers are struggling with the concept of making applications that can work across slower network links."

The first fruits of Microsoft's DSI are due with the Windows Server 2003 operating system, although they won't all necessarily make the April 24 launch date. For in-

stance, the Windows System Resource Manager, which will allow IT managers to allocate CPU and memory to an application, is due to ship via a separate CD.

Another highly touted new feature, called Automated Deployment Services, is due in June. With that tool, a company will be able to deploy hundreds of customized Windows server system images in minutes, according to Microsoft. A beta copy was made available to early adopters last week.

Many of the new features and tools eventually may become appealing to IT shops, but they didn't appear to en-

gender much enthusiasm among conference attendees. Several IT managers expressed confusion

about or indifference to the new long-term strategy, and they directed their attention at Microsoft's more immediate product plans.

Sara Scuereb, an infrastructure engineer at Daimler-Chrysler Services North America LLC, said she was frustrated to learn that the long-delayed Systems Management Server (SMS) won't be released to manufacturing until September. At last year's Management Summit, Microsoft said the product would ship by the end of June.

## MANAGEMENT MUSCLE

Microsoft gets more serious about systems management:

QuickLink 37240  
www.computerworld.com

## Microsoft's Dynamic Systems Initiative

Automated  
Deployment  
Services

**Definition:** Provisioning and administration tool that allows companies to deploy servers in a data center environment from a bare-metal state.

**Due:** June 2003.

System Definition  
Model

**Definition:** An XML-based manifest, or blueprint, defining the resources on which an application depends, the application's operational behavior and the manner in which it is deployed and updated.

**Due:** Starting in 2005.

System  
Center

**Definition:** Management suite that will include Microsoft Operations Manager and Systems Management Server.

**Due:** Initial MOM 2004 and SMS 2003 bundle in summer 2004; fully integrated product in 2005.

"We can only wait so long," she said.

Scuereb said her company is anxious to use the mobile client and asset management features in the SMS 2003 product, but the delay has prompted it to look at a competing product from Altiris Inc. in Lindon, Utah.

The other main product in Microsoft's management arsenal is also being refreshed. The company announced last week that a new version of Microsoft Operations Manager (MOM), its event and performance management software for servers and applications, is due in 2004. New features will include a task-based operator console, auto-alert resolution, improved reporting capabilities and a broader array of management packs for managing Microsoft products, such as Exchange Server and SQL Server.

## New Product

As part of the DSI, Microsoft also announced that SMS and MOM will be integrated into a new product called System Center. The initial version, due next year, will bundle the two products and enable them to share the same data warehouse for unified reporting. The follow-on, due in 2005, will feature deeper integration of the two products and build on the SDM foundation, said Kirill Tatarinov, vice president of Microsoft's enterprise management division.


While some users lauded the move and said that they expect System Center to be useful, others questioned how the product will fit with their organizational structures.

Brad Jacobson, an operating systems engineer at Wells Fargo Financial Inc. in Des Moines, Iowa, said large companies often have departments focusing on different areas of management. SMS is typically used for desktop administration, and MOM is for servers.

"Putting MOM and SMS together doesn't fit our company structure," he said.

Tatarinov said SMS and MOM will also continue to be available separately. ■





**My goal is to get you  
back for firing me.  
My goal is to exploit your  
overtaxed IT department.  
My goal is to take you down.**

In a world where there's a different kind of threat every day, you need a different kind of security.

New threats can blow through any firewall or anti-virus software. That's why we deliver seamless information protection with centralized management for networks, servers and desktops. From proactive research and award-winning software to 24/7 protection and response services, our solutions detect, prevent and respond to attacks and misuse. And it's all backed by the X-Force™, our global protection services organization. To learn more, call 800-776-2362. Or visit [www.iss.net/ad/cw](http://www.iss.net/ad/cw).



**INTERNET  
SECURITY  
SYSTEMS™**



# L.A. Police Seek Bandwidth Boost From WLAN Technology

Officials expect new systems to speed deliveries of graphical data to officers

BY BOB BREWIN  
NEW ORLEANS

**F**ACING A NEED for higher-bandwidth communications systems in order to meet increased homeland security requirements, the Los Angeles Police Department (LAPD) plans to install wireless LANs at its 27 police stations within the next three months.

Roger Ham, deputy chief for communications at the LAPD, said at the Cellular Telecommunications & Internet Association's Wireless 2003 conference here that the WLANs will be used to send mug shots, maps and other graphical data to police officers. Transmissions like that aren't feasible on the wireless wide-area network the department installed citywide two years ago.

As part of the WLAN project, the LAPD plans to deploy about 1,500 Pocket PC handheld computers to officers working in vehicles and on foot patrols. The handhelds, made by Symbol Technologies Inc. in Holtsville, N.Y., will include 802.11b WLAN cards designed to let them communicate with wireless access points inside the police stations at raw data transfer rates of up to 11M bit/sec. By comparison, the LAPD's wireless WAN delivers peak throughput of 19.2K bit/sec.

## Faster Mug Shots

The range of WLAN transmissions is limited to about 300 feet, but Ham said the technology will make it easier to distribute images to police officers in real time. Currently, mug shots are handed out on paper at the roll call for each shift. The WLAN system could also provide a fast way to distribute photos of lost children as part of the Amber

Alert system, Ham said.

Will Strauss, an analyst at Forward Concepts Co. in Tempe, Ariz., called the LAPD's plan "a cheap way to get bandwidth" that officers could use to periodically download important data as they passed by police stations.

Ham, who declined to disclose the expected cost of the project, said he eventually wants to develop an interface between the WLAN radios

built into the Symbol handhelds and the WAN-based Motorola Inc. radios that are now used in police cars. That would let officers use the handhelds as remote units connected to the WAN while outside their vehicles, he noted.

Other police departments, including the ones in Baltimore and in Glendale, Calif., have already installed similar WLAN-to-WAN systems.

Mike Shlasko, director of the public-safety business unit at Symbol, said the company will provide ruggedized handhelds running Microsoft

Corp.'s Pocket PC operating system to the LAPD. He added that Symbol is a subcontractor on the WLAN project to Vitek Wireless Inc. in White Plains, N.Y. The deal between the two firms and the LAPD was finalized during the past few weeks but has yet to be announced, according to Shlasko and Ham. Vitek, a developer of wireless applications, wouldn't comment about the project.

Ham said that he views WLANs as a stopgap measure and added that the LAPD needs additional WAN spectrum for routine duties and

## The LAPD's Wireless LAN System

- The WLAN will be used to transmit broadband data, such as mug shots, that could choke the LAPD's existing wireless WAN.
- The department plans to install WLAN access points in all 27 of its police stations.
- It will deploy 1,500 WLAN-equipped Pocket PC handhelds.

homeland security requirements. For example, the LAPD now has patrols at Los Angeles International Airport. Ham said the department could use more WAN bandwidth to transmit data from the airport's facial recognition systems to police headquarters. ▀

# Military Investigates System Intrusion Involving Windows 2000 Security Flaw

Microsoft issues patch, but some users may have reboot problems

BY DAN VERTON  
AND CAROL SLIWA

Pentagon sources last week confirmed that officials are investigating an apparent intrusion into at least one military server through a previously unknown vulnerability in Microsoft Corp.'s Windows 2000 operating system.

Microsoft gave the buffer overflow vulnerability a "critical" severity rating and issued a software patch designed to fix the flaw, which involves a component of Windows 2000 that's used to manage the Web Distributed Authoring and Versioning (WebDAV) protocol. Hackers could use the hole to take control of unprotected Web servers, and Microsoft said it has received isolated reports of attempts to exploit the vulnerability.

The initial attack reports centered around a U.S. Army Web server. But after an inves-

tigation, the Army said it had no evidence that any of its systems had been compromised.

"To the best of our knowledge, an Army system was not attacked," said Col. Ted Dmuchowski, director of information assurance at the Army's Network Technology Enterprise Command. "According to our records, the military sites that were attacked did not belong to the Army."

Nonetheless, Dmuchowski said in a statement that IT staffers "have taken measures to push the appropriate patch down to all Army networks."

Security analysts described the reported attack as a rare example of a "zero-day" exploit, in which hackers try to take advantage of a software vulnerability that has yet to be

reported and for which there is no available patch.

Jeffrey Jones, senior director of marketing for Microsoft's Trustworthy Computing security initiative, said company officials were told about the vulnerability on March 12 by two customers who reported that they were being actively attacked. Jones declined to disclose further information about the users.

Microsoft typically issues security bulletins on Wednesdays, but Jones said it decided to post the WebDAV warning on its Web site last Monday because of the reports of active attacks.

The company also specified work-arounds for users who may not be able to apply the fix right away.

## More Microsoft Security Holes

SEVERITY  
RATING:  
CRITICAL

A buffer overflow flaw in the Windows Script Engine, which lets various versions of Windows run code that's written in languages such as Visual Basic Script.

SEVERITY  
RATING:  
MODERATE

A vulnerability in the Internet Security and Acceleration Server 2000 firewall and Web caching software that could result in denial-of-service attacks.

"We're trying to put an extra emphasis on alternative ways to protect yourself," he said.

Indeed, Microsoft acknowledged that the patch itself could cause problems for some users of Windows 2000 and its Service Pack 2 bug-fix update. After issuing the patch, the company said that it's incompatible with a dozen other fixes developed for the operating system from December 2001 to February 2002.

## Incompatibilities

The incompatibilities may leave IT managers unable to reboot their systems after they install the new patch, according to Microsoft. Users with certain versions of a file called ntoskrnl.exe on their Windows 2000 systems should call Microsoft's product support services unit before they apply the patch, Microsoft said.

WebDAV is enabled by default in Version 5.0 of Microsoft's Internet Information Server (IIS) software, which is bundled with Windows 2000. The protocol is a set of HTTP extensions that let users edit and manage files on remote servers. Microsoft said the buffer overflow vulnerability could be exploited by sending a specially written HTTP request to systems running IIS. ▀



# THERE'S SHALLOW INTEGRATION AND THERE'S DEEP INTEGRATION.



## **MAKE SURE YOU KNOW THE DIFFERENCE BEFORE YOU DIVE IN.**

Everybody seems to be jumping into integration these days, but it takes a deep integration solution to deliver the true benefits of a real-time business. That's what TIBCO Software delivers with The Power of Now.™

**The Power of Now.** It's the transformation of your company into a real-time business. It unifies and optimizes the assets you already have—your people, systems and processes—to coordinate end-to-end activities and get information where and when it's needed. It's a business operating at its peak efficiency, and generating immediate and measurable results.

**Real-time Results.** When TIBCO integrated the disk drive giant Seagate with its partners and customers, the resulting system delivered superior customer service and enabled the company to bring its products to market faster. And when TIBCO created adidas-Salomon's real-time supply chain, it resulted in faster time to market and higher revenues for the sporting goods marketer. That's The Power of Now.

Learn how our deep integration has enabled real-time business for other Global 2000 companies. Call 800-420-8450, or visit us at [www.tibco.com/cwa](http://www.tibco.com/cwa) to obtain your Executive Guide to Real-Time Business, the first step toward the Power of Now.

 **TIBCO**  
The Power of Now™



## BRIEFS

## Glitch Hits HMO's Rx Label System

Kaiser Permanente Health Plan Inc. said a systems glitch following a power outage may have caused labeling errors on prescriptions dispensed to about 4,700 of its patients on March 13. The Oakland, Calif.-based health maintenance organization added that it was conducting diagnostic testing to determine what happened. No adverse reactions have been reported thus far by patients, Kaiser said.

## Cisco Agrees to Buy Two Vendors

Cisco Systems Inc. announced deals to buy The Linksys Group Inc. in Irvine, Calif., and SignalWorks Inc. in Mountain View, Calif. Cisco will exchange stock that's currently valued at about \$500 million to acquire Linksys, which makes networking products for consumers. The company will use \$13.5 million worth of stock to buy SignalWorks, which develops IP telephony software.

## Publishing Firm Names New CIO

The McGraw-Hill Cos., a publisher and data provider in New York, said it has hired Mostafa Mehrabani as its CIO. Mehrabani, who was named one of *Computerworld's* Premier 100 IT Leaders in 2001, will report to McGraw-Hill's chief financial officer. He was previously CIO at TRW Inc., an aerospace company that Northrop Grumman Corp. bought in December.

## Short Takes

**SUN MICROSYSTEMS INC.** released a set of tools for developing Java-based Web services applications that utilize its Sun ONE software. . . . **HEWLETT-PACKARD CO.** said it plans to offer full technical support for **RED HAT INC.'s** Enterprise Linux software to users of HP servers.

## i2 Looks to Simplify Supply Chain Software With Upgrade

New release includes vertical industry templates, support for Web services

BY MARC L. SONGINI

**B** ESET BY ongoing losses and a probe by the U.S. Securities and Exchange Commission, i2 Technologies Inc. hopes an upgrade of its supply chain management software that's being announced this week will help it get back on track with users.

The Dallas-based software vendor said its i2 Six release will be less expensive to install and easier to use than prior versions were. The new applications include prebuilt templates for various vertical industries and will support out-of-the-box integration with enterprise resource planning systems, according to i2.

In addition, the company is building Web services support into the new applications. For users, that should speed up the process of developing data integration links between i2 Six and applications developed by other vendors, i2 officials said. The new software will also be able to exploit technologies such as Java 2 Enterprise Edition and XML.

Pallab Chatterjee, president of solutions operations at i2, said the company's goal is to reduce the pain users feel when they install the applications and to speed up the returns on their investments.

"We believe if we can help the CIO reduce the total cost and then send some money back to the CEO, he can get some brownie points," he said.

For example, Chatterjee noted that a new tool kit coming with i2 Six is designed to help corporate developers more easily create integrated data and business process workflows. The tool kit includes a common data dictionary and a

set of workflow design mechanisms, he said.

Mitsubishi Caterpillar Forklift America Inc. is a beta tester that upgraded from Version 4.3 of i2's Factory Planner to i2 Six in November.

Kent Hornbacker, manager of manufacturing materials systems at the Houston-based company, said the new software

helped Mitsubishi Caterpillar cut the time it takes to run production-scheduling models from as much as three hours to just 20 minutes.

Mitsubishi Caterpillar was also able to optimize its mod-

eling processes by factoring in transportation and supplier data that wasn't taken into account by the older i2 application, Hornbacker said. The company now plans to use i2 Six to collaborate with a third-party logistics company in a bid to improve transportation performance, he added.

The fact that i2 has developed an integrated system that supports high-velocity supply chain integration is of particular interest, said Dwight Klappich, an analyst at Meta Group Inc. in Stamford, Conn. But i2 Six will simultaneously support real-time data exchanges and the more typical batch processing, Klappich said. "A completely real-time supply chain is a dangerous thing," he said. "It would be anarchy."

## New in i2 Six

- A tool kit designed to help users build information workflows
- Support for J2EE, XML and Web services technology
- Enhanced event management capabilities to give users real-time views of supply chains
- Industry-specific templates and simplified data integration tools

The upgraded applications are available now, said i2.

The company, which has reported five straight quarterly losses, in January acknowledged that the SEC had launched an informal inquiry into the accounting procedures it used in 2000 and 2001 [QuickLink 36004]. ▀

## Fidelity Installs SAN Management Tool

Company switches from homegrown provisioning app

BY LUCAS MEARIAN

Fidelity Investments this week plans to announce that it's rolling out a packaged storage-area network (SAN) management tool to replace an in-house application used to automatically provision storage space and charge business units for using the capacity.

For the past three months, Boston-based Fidelity has been working to install InterSAN Inc.'s Pathline 2.5 software at multiple data centers. Scotts Valley, Calif.-based InterSAN said it will formally announce that version this week; the software includes features such as chargeback reports and automated reconfiguration of data paths.

Ken Ayotte, a systems architect at Fidelity, said the mutual funds company is using Pathline to help its IT staff central-

ly manage about 50% of a SAN with more than 200TB of data stored primarily on EMC Corp.'s Symmetrix disk arrays and IBM's Shark devices. By year's end, Fidelity plans to use the software to manage 100% of the networked storage, Ayotte added.

Fidelity has already been automating its storage devices for the past 18 months with homegrown software; switching to a commercial application has let the company free up several systems architects who had been working to maintain the in-house technology, said Ayotte.

"For anybody who's got a team of architects, that's the last thing you want them doing full time," he said. "You want them looking out into the future and doing architect work." Ayotte declined to disclose how much Fidelity is spending to install the Path-

line software.

Storage administrators at Fidelity sometimes handle more than 100 provisioning requests per month, which can translate into hundreds of changes to the company's SAN. Ayotte said the IT department saved

hundreds of man-hours on a monthly basis by moving from a manual provisioning model to the homegrown application.

## READ MORE

For more information about this topic, visit our Storage Knowledge Center:

QuickLink k1700  
www.computerworld.com

Now the addition of Pathline is giving Fidelity the ability to tie available storage capacity on the SAN to specific applications and then provision the disk space for "an application instead of a server," Ayotte said.

Switching to the packaged software has also helped the company automate tasks such as storage inventory management, SAN performance monitoring and device configuration, he added. ▀



**Cut supplier costs  
to procure  
greater profits.**

SAS® provides a complete view of who's buying what in your company...and from which suppliers. You can consolidate spending, leverage your purchasing power, minimize risk and maximize profits. And align your procurement strategies to meet enterprise goals. See for yourself how leading companies are reaping the rewards of SAS supplier intelligence software. Visit us on the Web for a free interactive tour or call toll free **1 866 270 5724**.

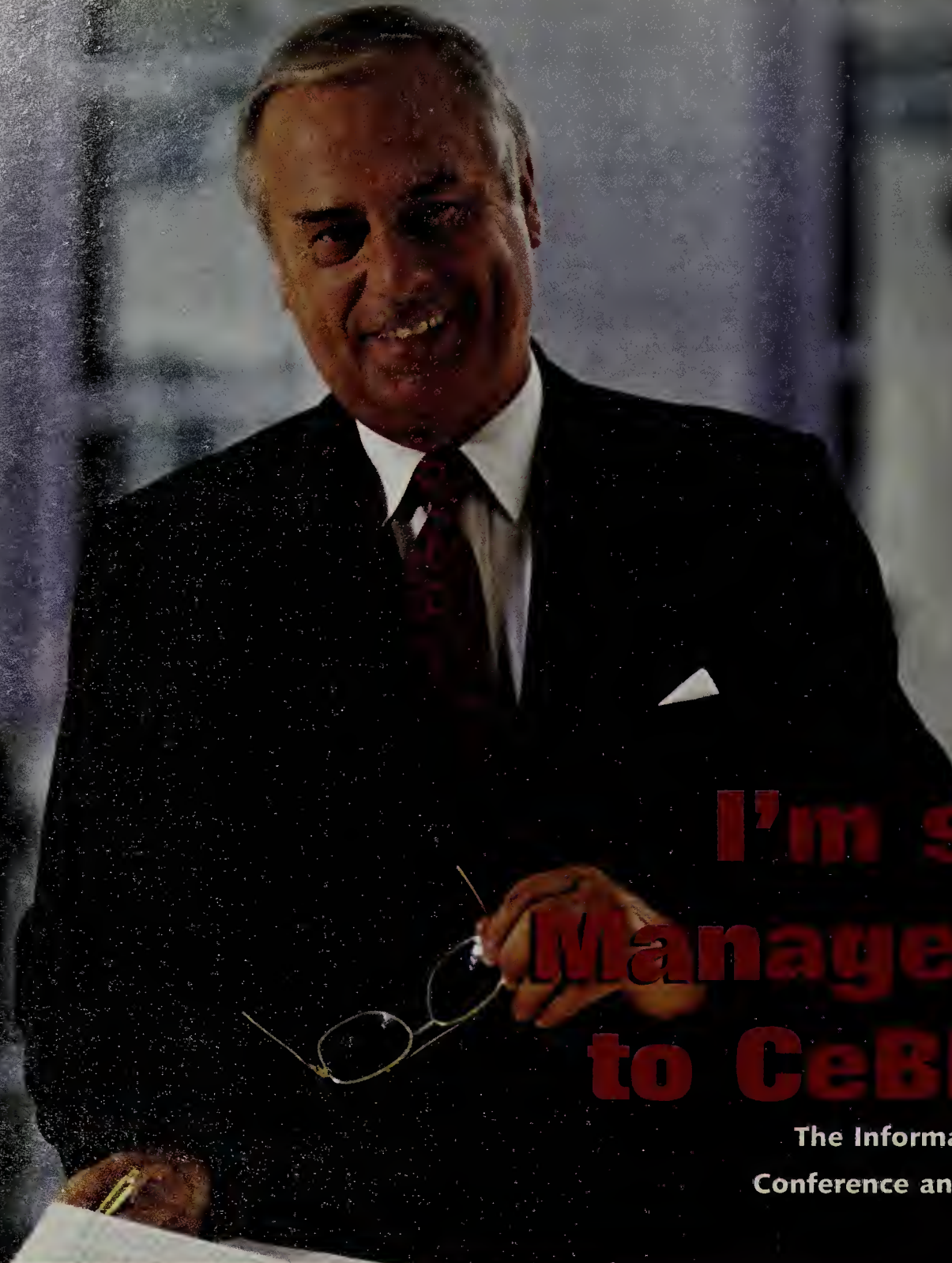
**www.sas.com/supplier**

*The Power to Know.*



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1





*"Our sights are set on corporate growth. We need to move fast to stay competitive."*

*My IT department can barely keep their heads above water with the day to day issues, let alone have time to research new system options.*

*I'm willing to invest in the education of today's technology if the return improves our productivity and bottom line results."*

# **I'm sending my Management Team to CeBIT America!**

**The Information and Communications Technology (ICT)  
Conference and Tradeshow – strictly business to business.**



**CeBIT**  
america

**June 18 – 20, 2003**  
**Jacob K. Javits Center**  
**New York City**

CeBIT America's 3-day, *enterprise only* Conference and Expo provide direct access to the world's systems, applications, communications and networking leaders, in one place, at one time.

If you're charged with integrating technologies and applications to meet your organization's business objectives, then we'll see you at CeBIT America - Where the World Turns for ICT Solutions.

**Register Now! Visit [www.cebit-america.com/info6](http://www.cebit-america.com/info6) to register and view our online brochure, or give us a call, 212-465-0531.**

Some of our participating partners: Builder.com • Business Council for the United Nations • CNET News.com • Computerworld • Gartner • Information Technology Association of America • MultiMeteor • Network World • New York eComm • Novell Best of BrainShare • Oracle • Tech Corps • TechRepublic • Wall Street Journal • Wall Street Technology Association • ZDNet



## Sun Server Exec Calls Linux a 'Friend'

BY JAIKUMAR VIJAYAN

In an interview this month, Neil Knox, executive vice president of Sun Microsystems Inc.'s volume systems product group, talked about blade servers, Linux support and the company's low-end server strategy.



**Q&A** How has Sun's new quarterly product-release schedule affected your low-end direction? I think it's no longer just a question of providing low-cost hardware. That's an old, single-element

strategy. So this is where the design of the Sun Fire blade [server] platform really comes into play. We gave it a mix-and-match environment so that [users] can pick their architectures. If they want SPARC/Solaris or Solaris/x86 or Linux/x86 environments, they have that choice.

**What is Sun's Linux strategy?** It isn't a competitor to us; it's a friend. Anybody that buys or installs Linux means they're not buying [Windows]. I think you'll see us over a period of time go more and more to a general-purpose Linux environment.

That's why we announced the blades with the mix, match and manage environment for Solaris and Linux. Some people think we're not serious [about Linux]. But we are deadly serious.

**Is Sun struggling over whether to push Solaris or Linux at the low end?** Customers are coming to us and saying, "You've got to continue providing us with the environment that we have become used to on Solaris." On the other hand, they may also be deploying Linux somewhere else, and they want to be able to get that from Sun. I

don't believe we're struggling at all. I think we have a very simple and very effective architecture strategy.

**What is driving Sun's low-end thrust after years of pushing high-end stuff?** I'm on the second floor. Every time I hear this

question, I want to jump out of the window. Where do you think we came from? We were a low-end shop when we started. Yes, we were supersuccessful with the Cray acquisition, and we have introduced killer

[high-end] products. In the meantime, the little volume-server business has continued to be a major element in the company. I think our success at the high end has kind of overshadowed [that]. ▀

## Strength in Numbers.

95% of surveyed customers would recommend Remedy

95%

1  
1st to be certified as ITIL-compatible by PinkVerify™

REMEDY®  
SERVICE MANAGEMENT SOLUTIONS

13,500

over 13,500 trained developers globally

312

alliance partners who extend Remedy's solutions globally

10,000,000

ten million users across 7,000 customers globally

Remedy is the leader in Service Management solutions. Our numbers speak for themselves.

Yet, there are other numbers important to Remedy. Operating cost reductions, improvements in customer satisfaction, increased employee productivity, shorter time to value—the bottom-line numbers you will achieve by using Remedy's out-of-box best practice applications to automate service management processes.

Your success depends on those numbers. Remedy delivers them.

[www.remedy.com/strength](http://www.remedy.com/strength)  
or call us at 1.888.294.5757

**Remedy®**  
a BMC Software company

### MORE ONLINE

To read an expanded version of this interview, visit our Web site:

QuickLink 37074  
[www.computerworld.com](http://www.computerworld.com)



# Canadian Credit Union Installs Wireless SAN Link

BY LUCAS MEARIAN

In one of the first projects of its kind, a Canadian credit union this month said it has set up a wireless IP network to

replicate banking data and other information from its primary data center to a disaster recovery site 32 miles away. Steinbach Credit Union Inc. in Stein-

bach, Manitoba, said it's saving \$70,000 (Canadian) per month by using the wireless setup instead of a leased virtual private network. Steinbach went live in February with the wireless link between the data center at its headquarters and a backup facility at a branch office in Winnipeg, Manitoba.

The credit union is using the wireless wide-area network to replicate customer data stored in Microsoft SQL Server databases, as well as loan origination information, other banking data, e-mail messages and streaming video from surveillance cameras. About 600GB of data is continually being updated between the two facilities.

Denis Van Dale, network administrator at Steinbach, said the company built three radio towers that are each more than 100 feet tall, bought four transmitters and installed new storage-area network (SAN) equipment for a total of about \$700,000 (Canadian). It also spent an unspecified amount of money on things such as planning and consulting services, he added. Steinbach expects to get a return on its investment within 20 months, Van Dale said.

The wireless connection offers full-duplex bandwidth of 100M bit/sec., according to Van Dale. About 65M bit/sec. is reserved for data replication, and the remainder is used for Internet connectivity, other data transfers and remote data sharing.

Steinbach installed multiprotocol switches made by Nishan Systems Inc. in San Jose to wrap Fibre Channel data packets in IP headers for transmission over the wireless network. Ethernet switches from Cisco Systems Inc. convert the data transmissions between 100M bit/sec. speeds and the Gigabit Ethernet rates used inside the two data centers (see diagram).

Proxim Corp. in Sunnyvale, Calif., provided the wireless WAN bridging technology, which includes built-in data-scrambling capabilities for encrypting information. The switches and bridges link two disk arrays made by XIOTech Corp. in Eden Prairie, Minn. Steinbach also uses XIOTech's data replication software.

Robert Gray, an analyst at IDC in Framingham, Mass., said it's extremely rare for companies to use wireless links for data backup and disaster recovery purposes. Steinbach's installation shows how flexible IP networks can be, he said. But, Gray added, such setups "could face interference, degradation over distance or objects such as buildings and people in the path."

Earlier this month, Steinbach ran into transmission difficulties when a radio station at the University of Manitoba in Winnipeg began broadcasting on the frequency used by the credit union's WAN. That added to the WAN's data stream, sending bit levels above certain thresholds and causing network disconnects, Van Dale said. Proxim resolved the issue by adjusting Steinbach's frequency. ▀

## Shorten backups.

Keep information available to users with a StorageTek high performance library and the new LTO Ultrium Generation 2 drive. With a capacity of 200GB and a blistering 30MB/second transfer rate, you can complete backups in no time. And it's fully read/write compatible with LTO Ultrium Generation 1 tape drives, so it seamlessly integrates with your existing StorageTek library. This kind of capacity, speed and affordability make the LTO Generation 2 drive right for any demanding IT environment. Like yours. For more information, visit [www.storagetek.com](http://www.storagetek.com).

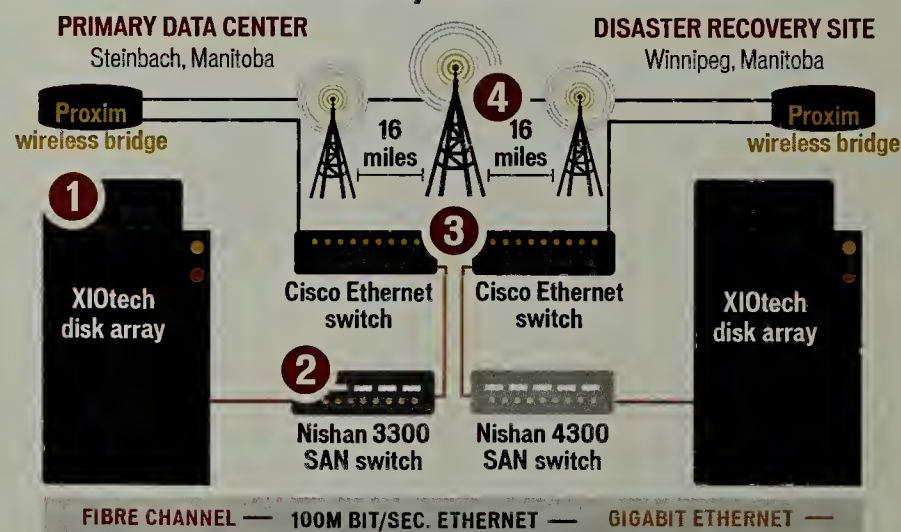


**STORAGETEK®**  
Save the Day.™

Copyright 2003 Storage Technology Corporation, Louisville, CO. All rights reserved. StorageTek, the StorageTek logo and Save the Day are either trademarks or registered trademarks of StorageTek Technology Corporation.

## STORAGE

## Wireless WAN/SAN Combination



1) The data is stored on matching XIOTech disk arrays with 600GB storage capacities.

2) Nishan storage switches convert the data between Fibre Channel and IP formats.

3) Cisco network switches handle conversions between Gigabit Ethernet and 100M bit/sec. Ethernet speeds.

4) Proxim bridges and Steinbach-owned transmission towers connect the data centers via two 16-mile wireless links.





Today, if I'm lucky,

I'll be totally ignored.

That means systems are humming

and data is flowing.

If not, I have to fix it.

Preferably, before anyone notices.

Save the day.



L5500

Keep bad things from reaching users and you'll get noticed for all the good you do. One way is to use an L5500 automated tape library with Tape Mirroring software for foolproof backup and restore. Or a D280 disk system with Remote Volume Mirroring software so systems rebound fast. Whatever your solution, we'll make sure you only get noticed when you want. Learn more about this story and other ways we can help you at [www.savetheday.com](http://www.savetheday.com)

 **STORAGETEK**® Save the Day.™



PATRICIA KEEFE

# Backing Up ROI

**I**N THE FACE OF A WAR that's being launched as I write this, it seems trivial to talk about ROI. And yet, inside the halls of cash-crunched corporations nationwide, there's no greater battle cry.

You've read the articles, sat through the panel dis-

cussions and studied the methodologies [QuickLink k2340]. You work it, you eat it, you dream it. But while ROI tops every project checklist and turns up in most project pitches, that's pretty much where it stays. Once a project is completed, few IT organizations go back and audit ROI expectations.

Figuring out what to put in those models — especially when working with major infrastructure projects that don't have an immediate ROI to speak of — and trying to cost-justify finished deployments when 10 other must-do projects await your attention are the missing parts of the ROI equation.

As Management editor Julia King so succinctly puts it, as much as CEOs and CFOs hammer away at IT to demonstrate ROI, IT is often powerless to do so without the business unit's help. And the business side? It doesn't have a clue how to translate improvements made possible by IT into any kind of IT-related ROI metrics.

The argument could be made that it's not the IT managers who need executive education to learn how to demonstrate ROI and come up with metrics; it's the middle managers and heads of the business units.

Take Ascential Software Corp.'s customer advisory board, which is made up of its 13 largest customers — companies like General Motors, McKesson, DHL and New York Life. How to calculate the ROI at the end of projects and where to go for help were hot topics at the



PATRICIA KEEFE is a Computerworld editor at large. You can contact her at [patricia\\_keeefe@computerworld.com](mailto:patricia_keeefe@computerworld.com).

board's recent meeting.

The board members were pretty clear about what they need: They need the business units to commit to the ROI upfront and to include the ongoing costs of support and maintenance in those calculations. Interestingly, they want Ascential's strategic vendors to lend a hand as well, especially in those cases where the

ROI is intangible.

These ROI postmortems are important. ROI models are, after all, expectations, not exact compass headings. Testing those assumptions can help wring out inefficiencies. The information gained can become part of the collective knowledge that's used to support and inform future project planning. This benefits everyone.

But none of this can be accomplished unless the business units — which these days are often the ones funding the projects — are held accountable for the bets they place on these capital investments. As one Ascential customer notes, "Business owners have ... to accept some responsibility for executing on the new data and achieving some business impact."

If upper management is really serious about wanting to infuse IT projects with more economic justification, it must mandate the cooperation that IT needs to produce and support those ROI numbers. The whole exercise has to be built on a shared understanding of the costs and benefits that the business unit will extract from the IT investment, says IT management consultant and Computerworld columnist John Berry [QuickLink s3000].

I think Ascential's advisory council is onto something. As Berry says, this kind of teamwork should happen if IT is the fabric of the business. "All these islands of responsibility, prerogative and control simply can't exist in a well-functioning organization where there is the need and desire for economic value out of the IT investment." Amen to that. ▀

PIMM FOX

# P2P for Grown-ups

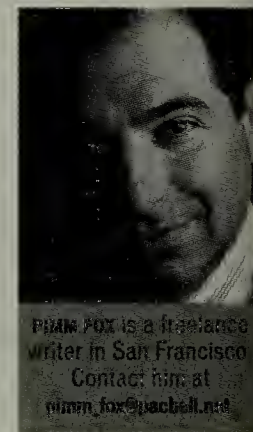
**I**T'S EASY to understand why peer-to-peer computing gets overlooked in the enterprise. It's viewed primarily as a way to use disparate resources, but with loads of extra security and management hassles.

Yet P2P is more than kids swapping bootlegged music on Napster. Inside the enterprise, P2P can encompass collaboration and communication to and from any networked device, anywhere. And now P2P tools are maturing to a point where you can knit together your network without eliminating safeguards and supervision. For example, Sun Microsystems' open-source P2P technology, dubbed JXTA, is a development standard capable of supporting initiatives for laptops, cell phones, PDAs and just about any digital device or sensor.

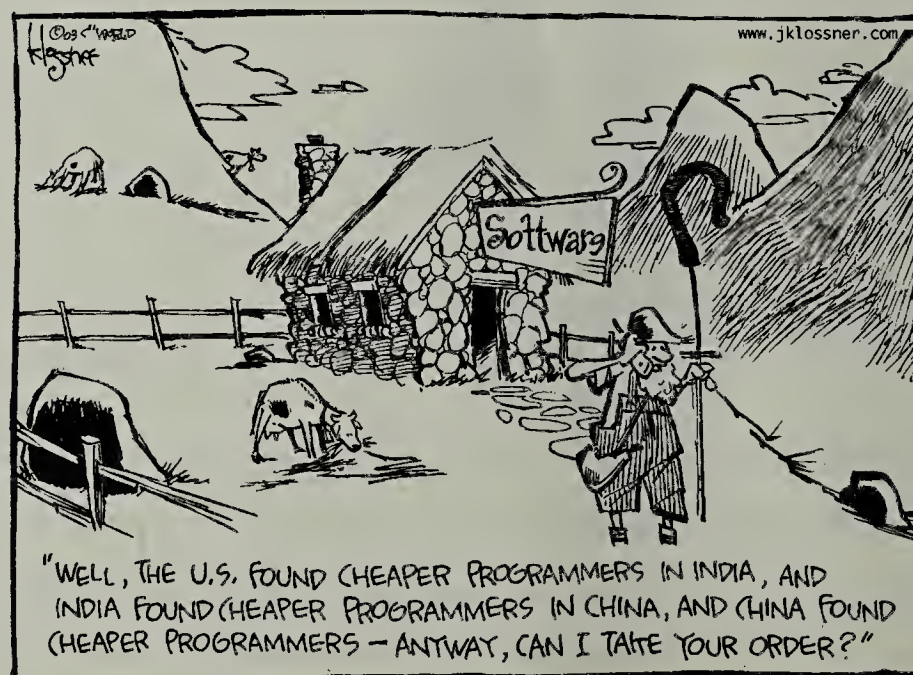
JXTA eliminates interoperability roadblocks. That means that adding chat or directory look-up features to different devices doesn't require a rewrite of code. By offering standard protocols, JXTA makes possible a P2P community whose members might — if they're thoughtful enough — create a development environment that crosses languages and devices. There are already JXTA implementations in C, Java, Perl, Python and C# for .Net that let you do device or service discovery. More are needed.

I think there are three areas in which P2P might be used inside companies. The first is in content-delivery networks. Rather than making a call on a central server for each query, it may be faster and cheaper to fetch data from a device that's already cached the information. Why go to a central server to view the CEO's media presentation when you can get it from someone in your department who has already viewed it?

Second, a class of real-time collaboration and workgroup applications



PIMM FOX is a freelance writer in San Francisco. Contact him at [pimm.fox@pacbell.net](mailto:pimm.fox@pacbell.net).





# Are You Prepared for Today's Challenges?

## STORAGE NETWORKING WORLD®

Co-owned & Produced by:  
**COMPUTERWORLD**

Co-owned & Endorsed by:



Storage Management • Enterprise Infrastructure • Business Continuity • Data Management and Security • Emerging Technologies

**April 14-17, 2003**  
**JW Marriott Desert Ridge Resort • Phoenix, Arizona**



### Hear User Case Studies

Witness the World's Foremost  
**Interoperability  
and Solutions Demo**

The original, largest and most proven educational forum for IT users involved in storage and related technologies

See 50+ companies work together with storage technologies including SMI-S, CIM, SAN Infrastructure and IP Storage



### Meet Industry Leaders

### Get a Valuable Education

Network with luminaries, press and analysts

Includes SNIA-Certification "Test-Ready" Courses (see Web site for details), SNIA-produced tutorials, general sessions, the Interoperability and Solutions Demo

### Recognize Best Practices

SNW Best Practices in Storage Awards Program

### Pre-Conference Golf Outing

Complimentary golf outing for registered IT Users

Sponsored by



### See and hear:



**Regis McKenna**  
Renowned  
Technology Advisor  
Venture Capitalist  
and Author



**Ulrich Seif**  
SVP & CIO  
National Semiconductor



**Steve Romaine**  
Chief Architect  
The Hartford



**David Chamberlain**  
VP Architecture &  
Capacity Planning  
Provident Financial

Storage Networking World® Spring 2003 Sponsors as of 2/19/03:

#### PLATINUM SPONSORS



#### GOLD SPONSORS



#### CONTRIBUTING SPONSORS



#### MEDIA SPONSORS



For more information visit [www.snwusa.com/expo](http://www.snwusa.com/expo) or call 1-800-883-9090 (1-508-820-8159)  
To sponsor and participate, call Ann Harris at 1-508-820-8667



**IT Managers  
and Executives  
Choose SNW!**

"... end-users at SNW learn how to maximize storage investments and understand how to efficiently and effectively manage storage ..."



**Fran Dramis**  
CIO, CHIEF E-COMMERCE  
AND SECURITY OFFICER  
BELLSOUTH

"... a key tool to help users understand storage management ..."



**Anthony Lloyd**  
VICE PRESIDENT  
COMPUTER OPERATIONS  
WARNER BROS.

"... the only storage networking conference that delivers it all ..."



**Gary Mountain**  
MANAGER, TECHNOLOGY  
SERVICES  
IDAHO POWER

"... delivers case studies to help solve end-user challenges ..."



**Brian Cobb**  
VICE PRESIDENT  
SYSTEMS ENGINEERING  
FANNIE MAE

# Find the World's Best Storage Solutions and Education!

## STORAGE NETWORKING WORLD®

**April 14-17, 2003**  
**JW Marriott Desert Ridge Resort**  
**Phoenix, Arizona**

Co-owned and Produced by:  
**COMPUTERWORLD**

Co-owned and Endorsed by:  
**SNIA**

Register today to attend the world's premier event on:

- Storage Management
- Enterprise Infrastructure
- Business Continuity
- Data Management and Security
- Emerging Technologies

Are you wrestling with storage and data management in today's challenging business climate? Is your infrastructure under increased pressure? Are business continuity worries keeping you up at night? Then attend Storage Networking World (SNW), the only conference

where IT Managers and professionals get an SNIA-endorsed education, a hands-on view of the world's only SNIA-sanctioned Interoperability and Solutions Demo, and access to legions of peers, experts and solutions you won't find anywhere else.

### See and Hear Regis McKenna



**Regis McKenna**  
Renowned Technology Advisor,  
Venture Capitalist and Author

**New Technologies and Industry Standards:  
Separating Hype from Reality**

### Find Out How CIOs Are Coping



**Ulrich Seif**  
EVP & CIO  
National Semiconductor

### See the World's Foremost Storage Interoperability & Solutions Demo! "Uniting the World of Storage"

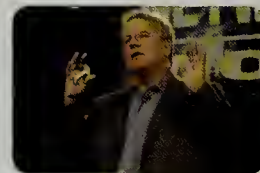


Do you have the cost-effective infrastructure to support your disaster recovery strategy? Still struggling with interoperability when everyone else has moved on? Wonder if SNIA technology specifications really make a difference? Need to manage more storage with the same fixed resources? Ready for iSCSI? If you answered yes to any of these questions, then you need to see the SNW Interoperability and Solutions Demo!

In "The Demo", you'll see over 50 SNIA member companies demonstrate the spectrum of solutions. You'll meet the experts, get your answers, and see the true value of SNIA technology specifications that reduce risks, increase interoperability, and provide common foundations to enable vendor choice. And you'll see the latest products with increased storage per square foot, new tools to automate management and to span more vendors, plus you'll see iSCSI in action.

### Hear Real-World User Implementation Case Studies

At Storage Networking World, you'll see IT managers and professionals describe how they implemented key storage technologies in today's world. You'll learn from their valuable lessons and have an opportunity to network with them.



### Get an SNIA-Endorsed Education

- A Primer delivering basic storage concepts, terminology and business applications.
- Exclusive SNIA-produced and Delivered Tutorial Sessions, offering immediately implementable tips, tools and techniques that cover:
  - Voice of the User and Virtualization
  - Disaster Recovery, Backup/Restore and High Availability Solutions
  - Securing and Managing Your Storage Networks
  - Focus on Networking Your Storage
  - Focus on Storage



### See the World's Largest Storage Industry Expo

You'll participate in live demonstrations and meet exhibiting companies specializing in the latest data management and storage networking products and services.



For more information and to register,  
visit **www.snwusa.com/expo** or call **1-800-883-9090**  
(1-508-820-8159)



## Witness User Case Studies



**ROD LUCERO**  
Chief Architect  
Conseco Finance



**JULIAN MORRIS**  
Vice President of IT  
Orft Worldwide



**BILL WESTON**  
Risk Manager  
Fidelity Investments



**STEVE ROMAINE**  
Chief Architect  
The Hartford



**PIERRE BAUDET**  
Business Systems Manager  
New Balance Athletic Shoe, Inc.



**CHERYL GLORE**  
Chief Implementation Planner  
Patrick Air Force Base, 45th Space Communications Squadron



**MO ASGARI**  
Vice President of Technology  
Photo Channel Networks



**DARYL BLACK**  
Storage Architect  
Telus Communications



**GARY PILAFAS**  
Senior Storage and Systems Architect  
United Loyalty Services (United Airlines)



**TOM RUWART**  
Intelligent Storage Technologist  
University of Minnesota Digital Technology Center

## Hear from Industry Leaders



**REGIS MCKENNA**  
Renowned Technology Advisor  
Venture Capitalist and Author



**PETER VAN OPPEN**  
Chairman & CEO  
ADIC



**YOGESH GUPTA**  
CTO  
Computer Associates



**STEVE DUPLESSIE**  
Founder and Senior Analyst  
Enterprise Storage Group



**HOWARD ELIAS**  
SVP & GM, Network Storage Solutions  
Software Hewlett-Packard Company



**MIKE ZISMAN**  
Vice President  
Corporate Strategy  
IBM Corporation



**JOHN MCARTHUR**  
Group Vice President  
IOC Storage Research



**FRED VAN DEN BOSCH**  
EVP & CTO  
VERITAS Software

## Agenda Snapshot\*

For details, updates, and to register visit [www.snwusa.com/expo](http://www.snwusa.com/expo)

\*subject to change

### Monday, April 14

(Pre-Conference Activity and Tutorial Sessions)

- 9:30am-11:00am Primer
- 12:00pm-5:00pm Golf Outing
- 1:00pm-2:00pm SNIA Tutorial Sessions - choose from five different sessions
- 2:00pm-2:10pm Break
- 2:10pm-3:10pm SNIA Tutorial Sessions - choose from five different sessions
- 3:10pm-3:20pm Break
- 3:20pm-4:20pm SNIA Tutorial Sessions - choose from five different sessions
- 4:20pm-4:30pm Break
- 4:30pm-5:30pm SNIA Tutorial Sessions - choose from five different sessions
- 7:00pm-9:00pm Pre Conference Networking Reception

### Tuesday, April 15

(General Conference - Day One)

- 7:15am-8:15am Continental Breakfast
- 8:30am-9:15am Opening Keynote: Regis McKenna
- 9:15am-12:00pm General Sessions
- 12:15pm-1:30pm Networking Luncheon
- 1:45pm-4:00pm General Sessions
- 4:00pm-5:30pm Technical, Technical/Business and Business Tracks
- 5:30pm-8:30pm Expo, Buffet Dinner, Interoperability and Solutions Demo

### Wednesday, April 16

(General Conference - Day Two)

- 7:15am-8:15am Continental Breakfast
- 8:30am-9:05am Opening Keynote: David Chamberlain
- 9:15am-12:00pm General Sessions

12:00pm-1:30pm Expo, Buffet Luncheon

- 12:00pm-7:15pm Interoperability and Solutions Demo Open General Sessions
- 1:45pm-3:50pm Break
- 3:50pm-4:00pm Break
- 4:00pm-5:00pm Technical, Technical/Business and Business Tracks
- 5:15pm-7:15pm Expo Open
- 7:30pm-9:00pm Gala Evening

### Thursday, April 17

(Tutorial and Workshop Sessions)

- 7:30am-8:30am Continental Breakfast
- 8:30am-11:45am Technical, Technical/Business and Business Tracks
- 11:45am Conference Concludes

## Register Today!

### Options for IT End-Users\*

General Conference Package (Apr. 15, 16):  
(Includes Expo, Meals and Receptions)

Pre-Registration (through April 11th)

\$1,095

On-Site Registration (after April 11th)

\$1,245

Total 4-day Package (Apr. 14, 15, 16, 17):

\$1,490

\$1,690

(Includes General Conference Package; Technical and Business Tracks; SNIA-produced Tutorials; SNIA-Certification "Test-Ready" Courses; Expo, Meals and Receptions)

### Options for IT Vendors\*\*

Total 4-day Package (Apr. 14, 15, 16, 17):

\$1,490

\$1,690

(Available to Sponsoring Vendors and their Resellers/Integrators; Industry Consultants; and Storage Solutions Implementors)

Non-Sponsoring/Exhibiting Vendor Package:

\$5,000

\$5,000

\* See IT End-Users description on the Registration Application on the reverse.

\*\* See Non-Sponsoring Vendor description on the Registration Application on the reverse.

## IT Managers and Executives Choose SNW!

"... I found storage solution tips in implementation, security, continuity, and interoperability that made my trip worthwhile ..."



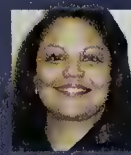
**Charles Inches**  
IT DIRECTOR  
CORNER BANCA SA  
SWITZERLAND

"... the best conference for storage users ..."



**Mike Prince**  
CIO  
BURLINGTON COAT  
FACTORY

"... the ideal resource for storage education and training ..."



**Vicki Hamilton**  
VICE PRESIDENT  
SHARED SERVICES AND  
IT OPERATIONS  
THE WEATHER  
CHANNEL

"... a user-centric conference where state-of-the-art technology and new storage developments are on display ..."



**Geoffrey Moore**  
AUTHOR, "CROSSING THE  
CHASM"  
CHAIRMAN AND FOUNDER  
THE CHASM GROUP



Submit your nomination today at  
[www.snwusa.com](http://www.snwusa.com)  
or email Nanette Jurgelewicz at  
[nanette\\_jurgelewicz@computerworld.com](mailto:nanette_jurgelewicz@computerworld.com)

## Travel and Accommodations

IDG Travel is the official travel company for Storage Networking World. They are your one-stop shop for exclusive discounted rates on hotel accommodations.

To reserve your accommodations:  
visit [www.etcentral.com](http://www.etcentral.com) OR  
call 1-800-340-2262 (or 1-508-820-8159)



## Pre-Conference Golf Outing

### Complimentary for Registered IT Users

The Pre-Conference Golf Outing at The Palmer Course at Wildfire, located at the JW Marriott Desert Ridge Resort, is complimentary (\$165 value) for registered IT End-Users (other participants, including sponsors and vendors, may play on an "as available" basis and are responsible for all applicable golf outing expenses).

For details: contact Chris Leger at 1-508-820-8277





# STORAGE NETWORKING WORLD



April 14-17, 2003

JW Marriott Desert Ridge Resort  
Phoenix, Arizona  
www.snwusa.com

Co-owned & Produced by:  
**COMPUTERWORLD**

Co-owned & Endorsed by:



## Application for Conference Registration

### TO REGISTER:

- Fax this form to 508-626-8524
- Or register online at [www.snwusa.com/expo](http://www.snwusa.com/expo)
- You will receive a confirmation via email

### QUESTIONS?

- Call: our Customer Service Line at 800-883-9090
- Email: [snwreg@computerworld.com](mailto:snwreg@computerworld.com)

CODE: EXPO

### Options for IT End-Users\*

General Conference Package (Apr. 15, 16):  
(Includes Expo, Meals and Receptions)

Pre-Registration  
(through April 11th)

☐ \$1,095

On-Site Registration  
(after April 11th)

☐ \$1,245

Total 4-day Package (Apr. 14, 15, 16, 17):

☐ \$1,490

☐ \$1,690

(Includes General Conference Package; Technical and Business Tracks; SNIA-produced Tutorials; SNIA-Certification "Test-Ready" Courses; Expo, Meals and Receptions)

### Options for IT Vendors\*\*

Total 4-day Package (Apr. 14, 15, 16, 17):

☐ \$1,490

☐ \$1,690

(Available to Sponsoring Vendors and their Resellers/Integrators; Industry Consultants; and Storage Solutions Implementors)

Non-Sponsoring/Exhibiting Vendor Package:

☐ \$5,000

☐ \$5,000

\* IT End-Users are defined as those who are attending Storage Networking World with an intent (and an IT spending budget) to potentially buy/purchase hardware/software/services/etc. from our conference sponsors and exhibitors. As such, account representatives/business development from any company, analysts, venture capitalists, and anyone else attending who does not have IT purchasing influence within their organization are excluded from the "IT End-User" designation. Enforcement of this interpretation and policy is at the sole discretion of Computerworld. Questions? Please call 1-800-883-9090.

\*\* Vendors are encouraged to participate at Storage Networking World through sponsorship. (Details are available by calling Ann Harris at 1-508-820-8667.) Alternatively, vendors (as well as venture capitalists, equity analysts, and other "non-IT end-user" professionals as defined by Computerworld), may apply for registration at the "non-sponsoring vendor" rate. Determination of what constitutes a "non-sponsoring vendor" registration is at the sole discretion of Computerworld. You will also be required to adhere to our non-solicitation policy posted on-site.

### Registration Information: (This section must be completed in order to process your application)

First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Last Name: \_\_\_\_\_

Title: \_\_\_\_\_ Company: \_\_\_\_\_

Street Address: \_\_\_\_\_ Suite, Apt., etc.: \_\_\_\_\_

City: \_\_\_\_\_ State/Prov: \_\_\_\_\_ Zip/Postal Code: \_\_\_\_\_

Country: \_\_\_\_\_ Phone Number: \_\_\_\_\_ Extension: \_\_\_\_\_

Fax Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Badge Name: \_\_\_\_\_ ☐ Special Services Required? (Please attach written description)

Would you like to receive information about playing in the golf outing on Monday, April 14th (PM)? ☐ Yes ☐ No

Please indicate your preferred conference shirt size: ☐ S ☐ M ☐ L ☐ XL ☐ XXL ☐ XXXL

### Attendee Profile: (This section must be completed in order to process your application)

#### SECTION A - FOR IT END-USERS ONLY

##### Your Business/Industry:

- ☐ Transportation/Utilities
- ☐ Mining/Oil/Gas
- ☐ Media/Publishing
- ☐ Banking/Finance/Insurance
- ☐ Telecommunications
- ☐ Wholesale/Retail (Non-IT)
- ☐ Advertising/Marketing/Public Relations
- ☐ Education
- ☐ Government/Military
- ☐ Healthcare
- ☐ Manufacturing (Non-IT)
- ☐ Other

##### Your Job Title/Function:

- ☐ CEO/COO/Chairman/President
- ☐ CIO/CTO
- ☐ VP/GM/Director
- ☐ IS/IT Director/Manager
- ☐ Other IS/IT Department Manager/Supervisor
- ☐ Other Corporate/Business Manager
- ☐ Corporate/Business Staff
- ☐ Consultant (Internal) or Other

Select item below that most closely matches your involvement in IT decisions:

- ☐ Specify features/Technical requirements
- ☐ Evaluate/Recommend Products, Brands, Vendors
- ☐ Create strategy/Determine the need to purchase

- ☐ Set budget for expenditure
- ☐ Authorize/Approve purchase
- ☐ None of the above

##### Employees in your entire Company:

- ☐ 10,000+
- ☐ 5,000 - 9,999
- ☐ 1,000 - 4,999
- ☐ 500 - 999
- ☐ 100 - 499
- ☐ Less than 100

##### Estimated annual revenue of your entire company:

- ☐ \$10 Billion+
- ☐ \$5 Billion - \$9.9 Billion
- ☐ \$1 Billion - \$4.9 Billion
- ☐ \$500 Million - \$999 Million
- ☐ \$100 Million - \$499 Million
- ☐ \$50 Million - \$99 Million
- ☐ Less than \$50 Million

##### Annual company IT budget (All IT products and services):

- ☐ \$100 Million+
- ☐ \$50 Million - \$99.9 Million
- ☐ \$20 Million - \$49.9 Million
- ☐ \$10 Million - \$19.9 Million
- ☐ \$5 Million - \$9.9 Million
- ☐ \$1 Million - \$4.9 Million
- ☐ \$500,000 - \$999,999
- ☐ Less than \$500,000

##### Annual company IT budget (Storage products and services):

- ☐ \$100 Million+
- ☐ \$50 Million - \$99.9 Million
- ☐ \$20 Million - \$49.9 Million
- ☐ \$10 Million - \$19.9 Million
- ☐ \$5 Million - \$9.9 Million
- ☐ \$1 Million - \$4.9 Million
- ☐ \$500,000 - \$999,999
- ☐ Less than \$500,000

##### Your personal IT spending authority (All IT products and services):

- ☐ \$100 Million+
- ☐ \$50 Million - \$99.9 Million
- ☐ \$20 Million - \$49.9 Million
- ☐ \$10 Million - \$19.9 Million
- ☐ \$5 Million - \$9.9 Million
- ☐ \$1 Million - \$4.9 Million
- ☐ \$500,000 - \$999,999
- ☐ Less than \$500,000

##### Your personal IT spending authority (Storage products and services):

- ☐ \$100 Million+
- ☐ \$50 Million - \$99.9 Million
- ☐ \$20 Million - \$49.9 Million
- ☐ \$10 Million - \$19.9 Million
- ☐ \$5 Million - \$9.9 Million
- ☐ \$1 Million - \$4.9 Million
- ☐ \$500,000 - \$999,999
- ☐ Less than \$500,000

#### SECTION B - FOR IT VENDORS ONLY

##### Your Business/Industry:

- ☐ VAR/VAD/ASP/System Integrator
- ☐ Industry Consultant/Storage Solution Integrator
- ☐ Manufacturing (IT)
- ☐ Computer Retailer/Dealer/Wholesaler
- ☐ Software Development (Storage)
- ☐ Other Computer Related (Non-Storage)

##### Your Job Title/Function:

- ☐ CEO/COO/Chairman/President
- ☐ CFO/Controller/Treasurer
- ☐ VP/GM/Director
- ☐ Sales/Marketing/Product Staff
- ☐ CIO/CTO/Other IS/IT Manager
- ☐ Engineering Staff
- ☐ Press

### Payment Method

- ☐ Check Enclosed (checks must be received by 4/4/03)  
(Make payable to: Computerworld; Mail to: Computerworld, Attn: Pam Malingowski, 500 Old Connecticut Path, Framingham, MA 01701)

☐ American Express ☐ VISA ☐ MasterCard  
Account Number: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Card Holder Name: \_\_\_\_\_

Signature of Card Holder: \_\_\_\_\_

#### Cancellation Policy (All of the below options require written notification...)

- In the event of cancellation, the registrant has three options:
  - 1) He or she may substitute another attendee for this conference.
  - 2) He or she may transfer this registration to the Fall 2003 Storage Networking World<sup>®</sup> conference, if written notice is received by March 31, 2003.
  - 3) The registration fee will be refunded, less \$250 service charge, if written notice is received by March 31, 2003.

Computerworld reserves the right to limit and/or refuse any registration for any reason.

### Schedule of Conference Events (subject to change)

#### Monday, April 14, 2003

- Pre-Conference Golf Outing
- Pre-Conference Networking Reception
- Tutorial Sessions

#### Tuesday, April 15, 2003

- General Conference
- Interoperability and Solutions Demo
- Exposition

#### Wednesday, April 16, 2003

- General Conference
- Interoperability and Solutions Demo
- Exposition
- Gala Evening

#### Thursday, April 17, 2003

- Tutorial Sessions



makes it possible to share files, invite new members and create new workspaces easily on the fly. People should be able to work on the same diagram, chat in real time and engage their peers remotely without added stress to IT infrastructure.

Finally — and this is still more hope than reality — a good P2P architecture should let wireless encrypted data flow back and forth between mobile users for things such as group e-mail lists, phone directories and schedules. Changes can be synced when one user gets tethered to the central nervous system.

There have already been 1 million downloads of JXTA, which comes with a pretty good open-source license that requires no royalty, no givebacks for fixes and changes, and no restrictions on the redistribution of any set of developed protocols.

Perhaps this will spur some P2P creativity. ▀

DANIEL J. WEITZNER

## The DMCA Jury Is In

**L**EGISLATORS, Hollywood lobbyists, IT industry heavyweights and law professors have been battling over how copyright law should apply to the Internet. While these mighty forces struggle over what the legal and technical landscape should look like, we may learn something about that future from what happened when a jury weighed in on the practical boundaries of copyright law.

High-stakes lobbying and court battles brought us a law called the Digital Millennium Copyright Act (DMCA), which both extends copyright protection to digital works and makes it a crime to use or distribute tools that help to break the copyright protection of digital works. These "anticircumvention" provisions have been controversial both with civil liberties advocates, who see them as restricting free speech, and with some people in the computer industry, who worry that they will regulate out of existence basic system functions such as cut and paste. The debate is far from over, but whatever the result, it will certainly have a fundamental impact on the kinds of computing tools

available to the enterprise.

The technology for anti-circumvention has also been quite controversial. Should computing platforms in the enterprise and the home be built to assure that it's impossible to copy documents, songs or images unless we have the explicit permission of the copyright holders? While this might help reduce the widespread infringement of music files, what effect would it have on the flexibility of basic enterprise computing? How about the free flow of information — the driving engine of the Internet and the key to productivity improvements brought about by networked computing?

Still, if computers don't enforce copyrights on digital works, will the entertainment industry suffer irrevocably?

For the first time in this debate, a federal jury decided on this con-



DANIEL J. WEITZNER is Technology & Society Domain Lead at the World Wide Web Consortium (W3C) and a research scientist at the MIT Laboratory for Computer Science in Cambridge, Mass. The opinions expressed are his alone and do not represent the views of W3C or its members. He can be reached at [djweitzner@w3.org](mailto:djweitzner@w3.org).

tentious question. They were asked whether software that breaks eBook copy protection codes violates the DMCA. In considering criminal charges leveled against a Russian software company that makes software to break the copy protection built into eBooks, the jury, in a federal court in San Jose, found that the software isn't criminal because there are legitimate reasons to allow users to make copies of information in eBook format. In the view of this jury, at least, it's not right to impose restrictive tools on all users just to catch a few lawbreakers.

This decision calls into question the tough provisions enacted by legislators all around the world. Ordinary folks, it seems, are much less inclined to throw people in jail in order to assure copyright holders that their works will be perfectly secure on the Internet.

Whether or not you agree with the jury's view, it does suggest that it's time to rethink the heavy-duty lock-and-key approach that many digital rights management systems are taking to protecting copyrighted works.

The dramatic rise (and fall) of services like Napster have focused law-making and technical attention on the 15-year-old who may care more about getting the latest music than the virtues of copyright. But in building systems designed to lock out the urges of teenagers, we've forgotten the vast majority of users, especially in the commercial and academic worlds, who respect copyright law.

Although in some cases heavy-duty technologies are in order, in this case perhaps the jury was right. We need technology to make it easier for law-abiding users to continue to respect copyrights, not more heavy-handed protection in general-purpose computing platforms. ▀

### WANT OUR OPINION?

More columnists and links to archives of previous columns are on our Web site: [www.computerworld.com/columns](http://www.computerworld.com/columns)

## READERS' LETTERS

### Can the Rhetoric and the Cheap Shots

**I WAS VERY DISAPPOINTED** to read Patricia Keefe's article on the Opinion page of the March 10 issue of *Computerworld* [QuickLink 36857]. The title of the article, "Iraqnophobia," and the fourth sentence, "As the Bush administration marches resolutely into the stiff wind of global disapproval..." are

expressions of political bias that are unwelcome and inappropriate for *Computerworld*.

This cheap shot, unworthy of the quality and mission of *Computerworld*, was sneaked into an otherwise good article full of solid advice for IT professionals trying to cope with an increasingly dangerous and

uncertain world. Sadly, it is an uninformed cheap shot as well. The disapproval Keefe speaks of is not even close to global. A significant portion of the Arab/Islamic world supports U.S. intervention. Her statement that the topic of war "hangs heavy... clouding conversation, darkening doorways" is largely inaccurate on the domestic front. The seriousness and somberness of the subject does not imply nationwide fear and depression. Indeed, media polls indicate 58%-66% of Americans favor military intervention.

But my purpose here is not to defend the current administration. It's to point out an error in judgment, taste and facts in one of my more valued journals.

Everyone is entitled to their opinion, expressed in an appropriate venue. Let's not taint *Computerworld* with inappropriate and ill-supported rhetoric.

**Tim Dale**  
Clackamas, Ore.

### Saving Face

**F**RANK HAYES hit the nail on the head regarding the amount of IT

work that requires "face time" with business people ["Offshore Face-off," QuickLink 36668].

If IT departments are truly going to be integral in redesigning (and redefining) business processes, we need to become both visible and vocal in all areas of the business. That means attending more of those meetings that "never applied" to IT before.

Besides, if no one ever sees the IT people and everything is working fine, people will start to wonder why they're paying so much for us when it doesn't look like we do anything.

**Jerry Simon**  
IT manager, New York

**COMPUTERWORLD** welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, *Computerworld*, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. E-mail: [letters@computerworld.com](mailto:letters@computerworld.com). Include an address and phone number for immediate verification.

More letters on these and other topics are on our Web site: [computerworld.com/letters](http://computerworld.com/letters)

### 'Onshore Offshore' Is Better Way to Go

**I'M STARTING TO BELIEVE** that the kind of offshore outsourcing described in the Feb. 17 article "Companies Expected to Boost Offshore Outsourcing" [QuickLink 36377] is a bad idea — and maybe downright dumb.

It's not hard to figure out why the appetite for these services is growing, but there are big risks, including nuclear war between India and Pakistan.

But I've long been in favor of what I call "onshore offshore" outsourcing, in which these same jobs are outsourced to high-unemployment pockets in the U.S. where the same IT skills can be developed. Wages will be higher than in India

but still considerably lower than in major metro areas. This has been done in a handful of places in the U.S. One of the most recent examples is Washington's Center to Bridge the Digital Divide and its rural telework program at Washington State University. This kind of program keeps the work, incomes and skill development in the U.S., achieves cost savings and helps insulate U.S. employers from the risks that are part of any international business dealings with developing countries.

**Gil E. Gordon**  
President, Gil Gordon Associates, Monmouth Junction, N.J., [gil@gilgordon.com](mailto:gil@gilgordon.com)



**ROBUST OBJECT DATABASE**

**HIGH PERFORMANCE SQL**

**MULTIDIMENSIONAL ACCESS**



## **Our post-relational database. It combines the best technologies in the database world.**

For your next generation of applications, move to the next generation of database technology: Caché, the post-relational database.

What makes Caché “post-relational”? It provides developers three integrated data access options which can be used simultaneously on the same data: an advanced object database, high-performance SQL, and rich multidimensional access.

Because Caché’s architecture is a multi-dimensional structure, applications built on it are massively scalable and lightning-fast. Plus, *no mapping is required* between object, relational, and multidimensional views of data. This means huge savings in both development and processing time. And, Caché-based applications don’t require frequent database administration or hardware and middleware upgrades.

More than just a database system, Caché incorporates a powerful Web application development environment that dramatically reduces the time to build and modify applications.

The reliability of Caché is proven every day in “life-or-death” applications at hundreds of the largest hospitals. Caché is so reliable, it’s the world’s leading database in healthcare – and it powers enterprise applications in financial services, government and many other sectors.

We are InterSystems, a specialist in database technology for 25 years. We provide 24x7 support to four million users in 88 countries. Caché is available for Windows, OpenVMS, Linux and major UNIX platforms.

InterSystems  
**CACHÉ**  
Make Applications Faster

Download a fully-functional version of Caché or request it on CD for free at [www.InterSystems.com/post-relational](http://www.InterSystems.com/post-relational)



## HANDS-ON REVIEWS

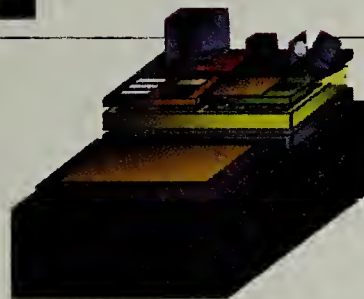
### Microsoft's Suite Dreams

The enhancements to Outlook are enough to make IT managers consider an upgrade to Office 2003, and there are plenty of other new and improved features in the suite, says reviewer Russell Kay. **Page 30**

## FUTURE WATCH

### Smart Dust

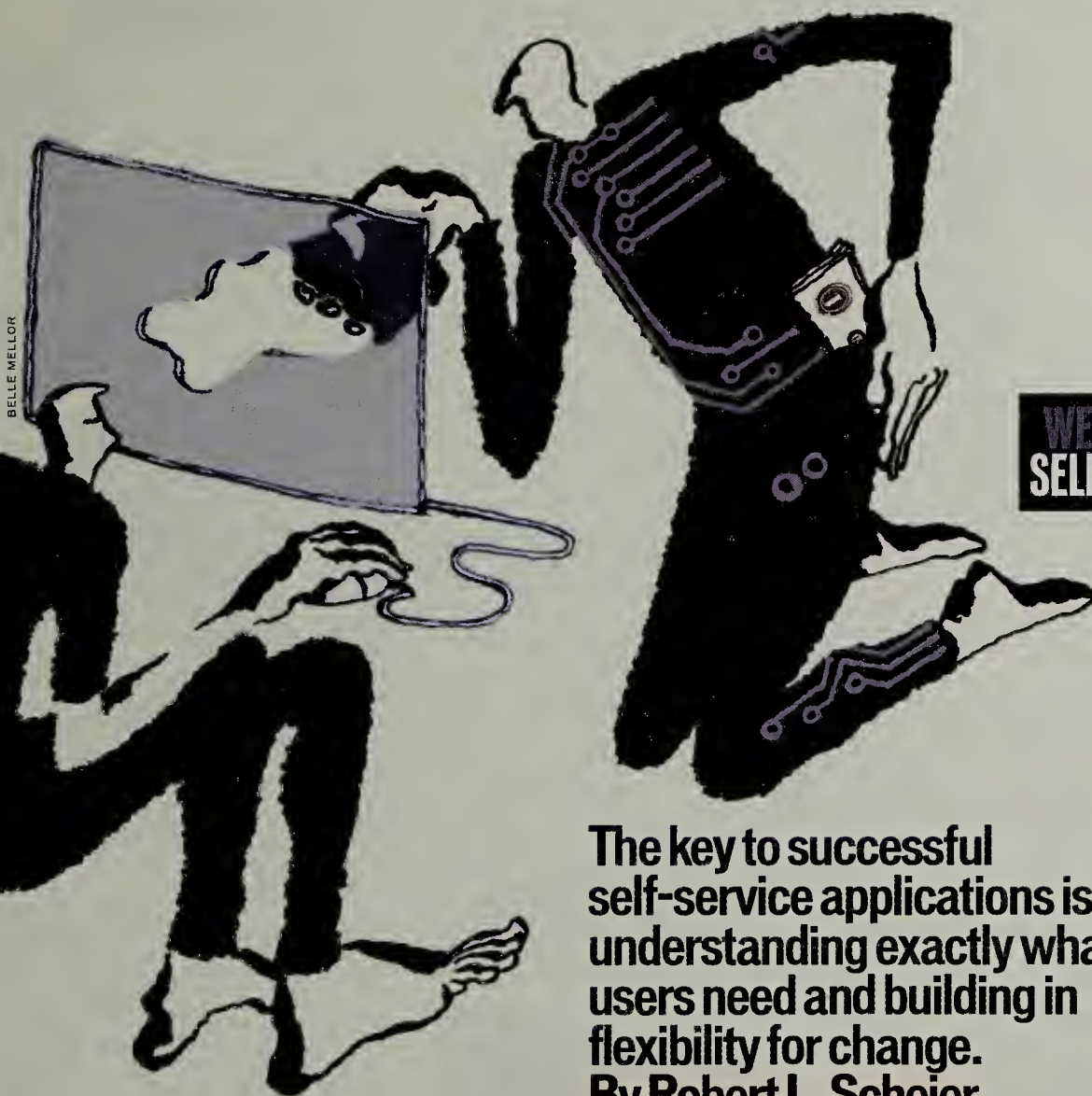
Tiny wireless sensors that can detect everything from light to vibrations could change manufacturing, medicine and even the military. **Page 32**



## SECURITY MANAGER'S JOURNAL

### Insecure Servers Suffer Image Problem

A good security policy and solid technology fail to protect servers when administrators take shortcuts around carefully designed procedures for updating them. **Page 34**



**The key to successful self-service applications is understanding exactly what users need and building in flexibility for change.**  
By Robert L. Scheier

## WEB-BASED SELF-SERVICE

**W**HEN WEB-BASED self-service is good, it's really good. Customer satisfaction soars and call center costs plummet as customers answer their own questions, enter their own credit card numbers and change their own passwords without expensive live help.

But when Web-based self-service is bad, it's really bad. Frustrated customers click to a competitor's site or dial up your call center — meaning you've paid for

both a self-service Web site and for a call center, and the customer is still unhappy.

Greeting self-service users with a confusing menu of options or asking them questions they can't answer is a sure way

to force them to call a help center. For example, when AT&T Wireless Services Inc. began rolling out its new high-bandwidth wireless networks, its self-service Web site required customers to say whether their phones used the older Time Division Multiple Access (TDMA) network or the newer, third-generation network. Most people didn't know which network they used, only which calling plan they had signed up for, says Scott Cantrell, e-business IT program manager at AT&T Wireless. So AT&T redesigned the site so the customer just enters his user ID and password, "and the application automatically sends you to the right [Web] site," Cantrell says.

According to Gartner Inc., more than a third of all customers or users who initiate queries over the Web eventually end up calling to get their questions answered. And although health insurers have busily rolled out self-service applications to help policyholders with claims questions, the "great, great majority" of transactions still go through a call center, says John Distefano, national leader of IT solutions in Cap Gemini Ernst & Young's payor practice.


Whether a self-service application is aimed at external customers or internal users such as employees, the keys to success remain the same: understanding where self-service can save the most money, building flexibility into application interfaces and business rules so the site can be changed as needed, and setting aside money and time for maintaining the site.

Knowing which problems generate calls to expensive staffers is the first step to finding out where the greatest potential savings lie and which costly integration work is worth doing, according to

*Continued on page 28*

# Know Thy Customer



A man in a suit sits on a wide set of stone steps in front of a classical building with columns. Several computer monitors are placed on the steps around him, each displaying a different business-related problem. The scene is lit with warm, golden-hour light.

Document needs approval. Now.

Team wants an intranet.

Can't locate the data.

Boss in China. File in Chicago.

Wants to share calendar.

Needs video conferencing.

**Managing collaboration can be challenging.**  
**That's why there's Windows XP and Office XP.**

Recognize any of those issues? Or, perhaps, all of them? We thought so. Many of these issues can be related to your legacy desktop software; fortunately, many of them can be addressed by features in Microsoft® Windows® XP Professional and Office XP Professional. Want specific



Microsoft



examples? Windows XP Professional offers built-in audio and video-conferencing capabilities that make the whole experience easy and intuitive for your end users. With the Send for Review feature, Office XP Professional lets users easily assign roles to everyone involved in the document review

cycle, while automatically providing the correct tools for each reviewer and allowing changes to be easily merged back into the original document. And finally, several new features make deployment easier than ever. For more ideas about managing your desktops, visit [microsoft.com/desktop](http://microsoft.com/desktop)



Continued from page 25

Forrester Research Inc. analyst Bruce Temkin. Syracuse University in New York, for example, held public forums on the topic in the spring of 2001 before giving students online access to information such as class schedules and the status of tuition payments, says Gary McGinnis, director of client services at the university's computing and media services department.

Companies can learn a lot about customer needs by analyzing calls coming into their call centers, says Temkin, such as how many times customers call to dispute a single phone call on their bills vs. how many times they call because they don't understand their bills. Most call center software can gather and present such information. Temkin recommends creating very precise categories to "tag" different calls to provide a detailed view.

The more complex the transaction is, the more expensive the integration. To let customers challenge charges online, says Temkin, a wireless provider must supply links to its billing system, a phone number look-up system to determine the actual recipient of a disputed call, and a rules-based system to evaluate the customer's claim. Since you may lose any savings if the Web customer winds up calling, he says, "you might as well not bother going down the integration path if you're not going to integrate all the pieces required to make that a self-service environment."

Before moving to the Oracle suite of business applications in 2001, McData Corp. estimated that it would take six weeks to load, clean and test the data from its legacy applications, says Debra Morton, director of business systems at the Broomfield, Colo.-based storage vendor. "It ended up taking more like three months and four times the amount budgeted, because we had so many sources of information," she says.

Rather than buying or building a separate self-service application, McData relied on Oracle Corp.'s business application suite. Using the self-service capabilities within an existing product suite reduces the need for integrating applications, which has dou-

bled or tripled the cost of some application efforts Morton has seen.

McData is implementing self-service capabilities so its suppliers can get up-to-the-minute forecasts of its manufacturing plans. The company is also automating customer support for its software products.

Companies that build their own interfaces among applications often find that they're not secure or don't scale well, say analysts. "Many of our new customers over the last year or so are replacing homegrown systems that couldn't scale," says Ted Morgan, vice president of marketing at Edocs Inc. in Natick, Mass.

When AT&T Wireless built a self-service site for its TDMA-based wireless technology, it used the Dynamo Web application suite from Art Technology Group Inc. in Cambridge, Mass., as well as Edocs' eaDirect to give customers access to billing information, says Cantrell. The company had to develop its own interfaces to the eight to 10 back-end systems that feed information to the Web application.

In building self-service capabilities for its latest high-speed wireless services, AT&T Wireless will use Siebel Systems Inc. customer relationship management (CRM) software, which wasn't in production when the company built earlier self-service sites.

### Embedding Business Rules

Developers must also find a way to embed business rules into their Web self-service environments. Often, as many as half of those rules have never been written down, says Edocs product manager David Chang. To find those missing rules, Edocs gathers experts from throughout a company to walk through processes such as changing an order.

Hard-coding business rules by writing them into the Web application may be easiest in the short run, but it makes the rules harder to change, says Andrew Kass, vice president of application development at Oracle. Instead, analysts and self-service vendors recommend encapsulating business logic in reusable application components so rules can be changed

## Justifying the Cost

**WHEN DONE RIGHT**, self-service Web applications can reduce call center staffing; save on the cost of printing, mailing and handling bills; earn a company volume discounts; and improve customer satisfaction.

Without disclosing specifics, AT&T Wireless spokesman Ritch Blasti says that the company is saving "several million dollars per year" in reduced calls to its call centers and that it has reduced the number of customers who switch to different carriers.

Network storage vendor McData has seen a 170% return on its \$5.6 million investment in Oracle's business applications, which include employee self-service, says Debra Morton, director of business systems. She estimates that McData is saving \$1 million to \$5 million per year because improved purchasing tracking qualifies McData for greater volume discounts and eliminates duplicate purchasing.

But remember to factor in the cost of publicizing your site when calculating ROI, say veterans. "The reason folks like American Express and AT&T Wireless have millions of people at their site is because they actively promote it," says Ted Morgan, vice president of marketing at Edocs.

—Robert L. Scheier

without every application that uses them having to be rewritten.

To ensure that customer data is current across multiple channels (such as the self-service application and the call center), many customers are turning to operational data stores, says Cap Gemini Ernst & Young's Distefano. The information in them might be 15 minutes to an hour old, he says, which is recent enough to ensure consistency. Another approach taken by vendors like Edocs is using data cataloging to help the self-service application find data that's still in transactional systems.

Continually updating the knowledge base of correct answers to customer questions can be one of the largest hidden expenses of self-service applications. Temkin recommends monitoring call center personnel and providing incentives to encourage them to make their updates clear and understandable.

There is no single tool that can provide end-to-end Web self-service for every company that needs it, according to analysts. Syracuse University, for example, turned to Business Layers Inc., a provider of provisioning software in Rochelle Park, N.J., to provide a directory and a single source of authentication that would let students sign on once to gain access to any online resources. But the Web portal itself, and the links to the school's PeopleSoft applications, were developed by a consortium of vendors and customers.

Whichever tools you use, "take a more holistic view of the world" when designing your self-service site, says Cantrell. "It's easy to say we're focusing on having the customer change a [specific] feature" over the Web, he says, but it's more important to build in flexibility so customers can help themselves to any other service AT&T offers in the future. ▀

Scheier is a freelance writer in Boylston, Mass. He can be reached at [rscheier@charter.net](mailto:rscheier@charter.net).

## Some Self-service Offerings

VENDOR	PRODUCT	DESCRIPTION
Business Layers Inc.	eProvision	A single source for identifying users and providing them with digital and physical resources such as e-mail accounts and PCs. A stand-alone self-service password reset application is also available.
Edocs Inc.	eaCare self-service platform	Uses cataloging and middleware technologies to gather data from legacy systems and update the knowledge base.
Kanisa Inc.	Kanisa 4.0	Provides self-service applications for Web and internal users.
Oracle Corp.	Self-service modules within Oracle's business applications	Include self-service capabilities for human services, expense reporting and procurement.
PeopleSoft Inc.	Various modules within its CRM suite	PeopleSoft Multichannel Interactions delivers e-mail response management and chat; PeopleSoft Order Capture Self-Service lets customers place and check the status of orders over the Web.
Primus Knowledge Solutions Inc.	Self-Service Console and eSupport for Web self-service; Quick Resolve for customer service agents	Based on the Answer Engine search tool and eServer knowledge base.
ServiceWare Technologies Inc.	eService Suite	Includes eService Site for Web-based customer self-service; eService Professional for customer service, sales and field service; and eService Architect for building and maintaining knowledge bases.
Siebel Systems Inc.	Siebel eService	A Web service portal.





The

**“NO HARDWARE  
AGENDA”**

storage software company.

VERITAS Software lowers your storage costs regardless of  
the hardware. EMC. Hitachi. HP. IBM. Sun. What's your agenda?

[veritas.com](http://veritas.com)

  
**VERITAS™**

Copyright © 2003 VERITAS Software Corporation. All rights reserved. VERITAS, the VERITAS Logo and all other VERITAS product names and slogans are trademarks or registered trademarks of VERITAS Software Corporation. VERITAS and the VERITAS Logo Reg. U.S. Pat. & Tm. Off. All other trademarks are the property of their respective owners.



# Microsoft's Suite Dreams

**Office 2003 has enough new features and improvements to tempt users, despite the cost of an upgrade. By Russell Kay**

## THE GOOD

- More XML-aware
- Research pane inside applications
- Terrific new Outlook e-mail client
- Shared calendars and address books with Exchange
- Improved spam filtering
- OneNote, a new addition to the suite, is a handy and productive tool
- Word's reading mode is a useful addition

## THE BAD

- Cost
- Inevitably, some retraining is necessary
- No must-haves for core applications besides Outlook

## THE JURY IS OUT

- Information rights management hooks for enforcing access to content
- Blocking of external content such as pictures from e-mail

**I**T'S 2003, AND MICROSOFT Corp. is getting ready to roll out its approximately biennial upgrade to Office, causing IT managers to ask themselves, one more time, whether they should (or indeed whether they can afford to) upgrade. Such an upgrade is never simple or cheap for enterprise IT. In the past, there have been serious downsides, such as when Microsoft changed the basic file formats and created incompatibility headaches for users who hadn't been switched over. And inevitably there are issues with training and support.

This time around, with Office 2003 (apparently, that "XP" nomenclature caused more problems than it solved), Microsoft is concentrating on expanding the envelope with new tools aimed at better collaboration among people.

I've been working with beta copies of the new software, and IT departments should seriously consider this upgrade. Even if you decide not to upgrade the suite, remember that the component applications of Office are available as stand-alone products. There may be good reason to upgrade individual applications — Outlook in particular — and perhaps add new ones.

## Ongoing Evolution

Created by Microsoft in 1989, the office suite concept has proved to be a clever marketing device. By packaging a few basic applications in a single box, Mi-

crosoft sold a lot of software because it offered a convenient way for users and businesses to get most of what they needed for word processing, spreadsheets, presentation graphics and simple databases.

Over many generations of development, these applications improved individually, worked better together and got bigger — lots bigger. Microsoft has steadily added applications — Visio, Publisher, MapPoint, Project and FrontPage — to the original "core" set, with the developing goal of making Office a platform for workgroup collaboration and communication. (There's a timeline detailing the evolution of the Office suite at QuickLink a2990 on [Computerworld.com](http://Computerworld.com).)

With Office 2003, Microsoft has taken the biggest leap yet. It has made XML a standard file format for most applications and has launched two applications — InfoPath (formerly known

as XDocs and NetDocs) and OneNote (nee Scribbler) — that offer new capabilities in the areas of forms, intelligent documents, note-taking and research.

Enterprise IT will want to investigate the new information rights management (IRM) controls debuting with Office 2003. This file-level security capability, which can be used only with Windows Server 2003, makes it easier for document owners to restrict access and change rights to specific content inside Office documents and e-mails.

For example, users can put expiration dates on messages and documents, and after those dates have passed, others wouldn't be able to read the documents without special permissions. Users can also make documents read-only, nonforwardable and nonprintable. After expiration, the documents still reside on the server or remote user's PC, but in encrypted form. A free

IRM viewer will be available to users of older Office versions who need to work with IRM-protected documents.

What about Office's core applications: Word, Excel, PowerPoint, Access and Outlook? All but the last include minor changes and improvements, but basically they're mature applications that haven't showed much need for new capabilities. One noteworthy addition to Word is a nice viewing mode specifically for reading documents on-screen. And a useful new feature that all Office applications share is a research task pane for performing information and Internet searches. This task pane can be shared with a workgroup. Beyond that, there's little new in the four primary applications to cause IT managers much concern — or spark much interest, for that matter.

Outlook is the big exception. It has been significantly overhauled and is now the productive and useful e-mail client and personal information manager it always should have been.

## A Brighter Outlook

The new version of Outlook is a drastically improved e-mail client. Microsoft has tweaked the user interface to put more information on-screen, make mail easier to read and let you organize your mail much more simply and quickly than before. If yours is an Exchange shop, your users will benefit greatly from using the new Outlook client; so even if you plan to stick with an older version of Office, you should consider buying Outlook 2003 separately. A Microsoft project manager says the interface for Outlook Web Access will be similarly changed to add the new capabilities.

On this new user interface (see left screenshot in diagram), the simplest change was putting the preview/reading pane on the right instead of at the bottom. This eliminates white space in

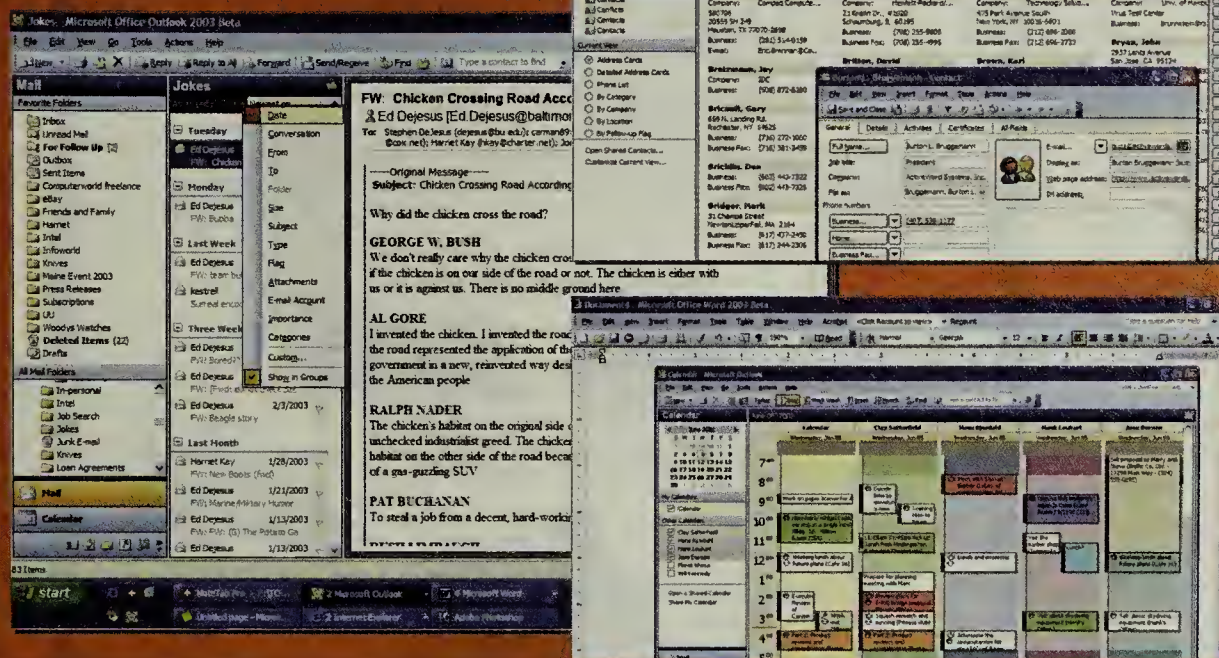
## HANDS-ON REVIEWS



## Outlook: A Clearer View

### E-MAIL FEATURES

- The new look presents more info in a more readable format.
- The new version features friendlier treatment of dates and other organizing keys.
- Announcements of new messages don't interrupt your work.
- Spam filtering has been improved significantly.
- Search folders make reading and organizing mail faster and easier.



### ADDRESS BOOK FEATURES

- Pictures can be stored with contact cards.

### CALENDAR FEATURES

- Calendar and contact screens can be tailored to users' specific needs.

the navigation bar, which is now the middle pane, and the narrower width speeds reading. The navigation bar itself now can be quickly organized via drop-down list, with messages sorted by date, sender, recipient, subject, conversation thread and more. Also, you can put a flag in one of seven colors on any message for later follow-up.

The neatest feature in the new Outlook may be the "search folders," which quickly bring you to, for example, all unread mail regardless of what folder it's in, all items flagged for follow-up or very large files. It's easy to make new search folders to meet other needs.

Other mail improvements include a much more effective spam-filtering process and what Microsoft calls "intelligent connectivity." If you're on a high-speed network connection, your mail is downloaded normally. But if you're on a slower line, Outlook downloads only the headers and a small portion of the message for review.

One appealing touch is the way Outlook announces new messages. If you're in another application or window when e-mail arrives, Outlook flashes a quick summary (the From and Subject lines, plus the opening words) in a box in the lower right corner of your screen. After three to five seconds, the summary gradually fades away. This lets you know immediately if the mail needs your attention now or can wait until later, without making you leave the application you're in.

In addition, the display is now completely tailored to each of Outlook's various sections — mail, calendar, contacts and tasks — presenting often-used choices at the left instead of buried under a menu tree. Contacts

can be switched more quickly from the normal card view to a simple phone listing or sorted by company or category and more. And you can now store pictures for individual contacts inside Outlook (see top right screenshot).

For individual users, Calendar is only slightly better. But for shops that use Exchange enterprisewide, Outlook's calendar has a useful new feature that shows multiple people's calendars side by side for easier scheduling (see bottom right screenshot).

## Overall, It's Worth a Look

With Office 2003, Microsoft has shifted its focus away from application-specific issues and toward collaboration

and connectivity. The core applications, which have been pretty good and essentially complete for nearly three years, were tweaked, but there's hardly anything there to upset or interest enterprise IT. Outlook got the overhaul it has needed for years; every company running Exchange Server should look at it carefully.

Of the new applications, OneNote is a valuable addition that will be especially useful for most knowledge workers and researchers. InfoPath is a more specialized forms-based application that will require significant IT participation to implement, but it may expand data-gathering capabilities for many enterprises.

Every part of Office 2003 is more XML-aware and better suited to content mining and data interchange. But whether that makes the entire suite an attractive package depends on your company's needs. However, OneNote and Outlook are clear winners that everyone should look at. ■

Kay is a Computerworld contributing writer in Worcester, Mass. Contact him at [russkay@charter.net](mailto:russkay@charter.net)

## OFFICE EXPANSIONS

To learn about InfoPath, an XML-based information-gathering tool that's new in Office 2003, visit:

**QuickLink 37079**  
[www.computerworld.com](http://www.computerworld.com)

## OneNote: A Harmonious Tool

**THE MOST INTERESTING NEW MEMBER** of the Office family is OneNote, an application designed for taking notes and doing research, as well as organizing, accessing, reusing and sharing free-form information from a variety of sources and in diverse formats. Unlike, say, Word, where the expected goal is a finished document, OneNote is intended as a preliminary tool for taking rough notes and assembling content from a variety of sources and in a variety of formats, including sound, graphics and Web-based information.

OneNote presents you with a blank page. You can click anywhere on the page and start typing; if you're using a Tablet PC, you can write anywhere on the screen using "digital ink." You can create new folders, accessed via tabs at the top of the screen, and new pages within folders, accessed with tabs on the right of the screen.

When you enter copy onto a OneNote page, it recognizes bullets and numbered lists. It understands outlines and offers several outline modes. You can

- highlight all or part of a Web page, a PowerPoint slide or an Excel spreadsheet and just drag it into OneNote, including any graphics.
- Finally, OneNote automatically saves everything all the time.

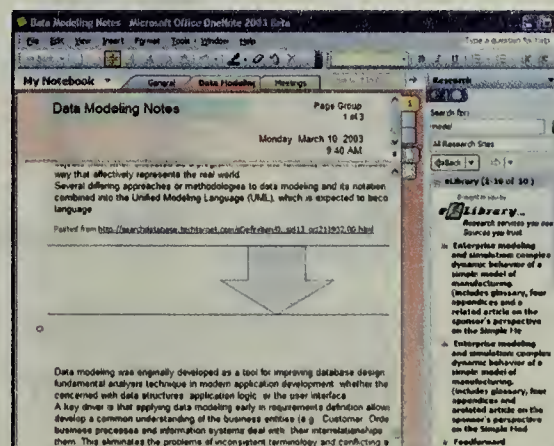
- If your computer has a microphone, you can record sound at the same time you're taking notes — you can take a OneNote-equipped laptop to a meeting and take notes while recording the whole meeting. Afterward, you can review your notes and e-mail follow-ups.

- During this review, you can click on any part of your notes and have the audio replay what was recorded at the time you made that note.

The synchronized recording is optimized for speech, using very high compression that needs about 8MB of storage for an hour of recording.

At the time of this writing, Microsoft had not yet decided whether OneNote would be an integral part of any of the standard Office packages or whether the application would have to be purchased separately.

— Russell Kay





**P**ICTURE being able to scatter hundreds of tiny sensors around a building to monitor temperature or humidity. Or deploying, like pixie dust, a network of minuscule, remote sensor chips to track enemy movements in a military operation.

"Smart dust" devices are tiny wireless microelectromechanical sensors (MEMS) that can detect everything from light to vibrations. Thanks to recent breakthroughs in silicon and fabrication techniques, these "motes" could eventually be the size of a grain of sand, though each would contain sensors, computing circuits, bidirectional wireless communications technology and a power supply. Motes would gather scads of data, run computations and communicate that information using two-way band radio between motes at distances approaching 1,000 feet.

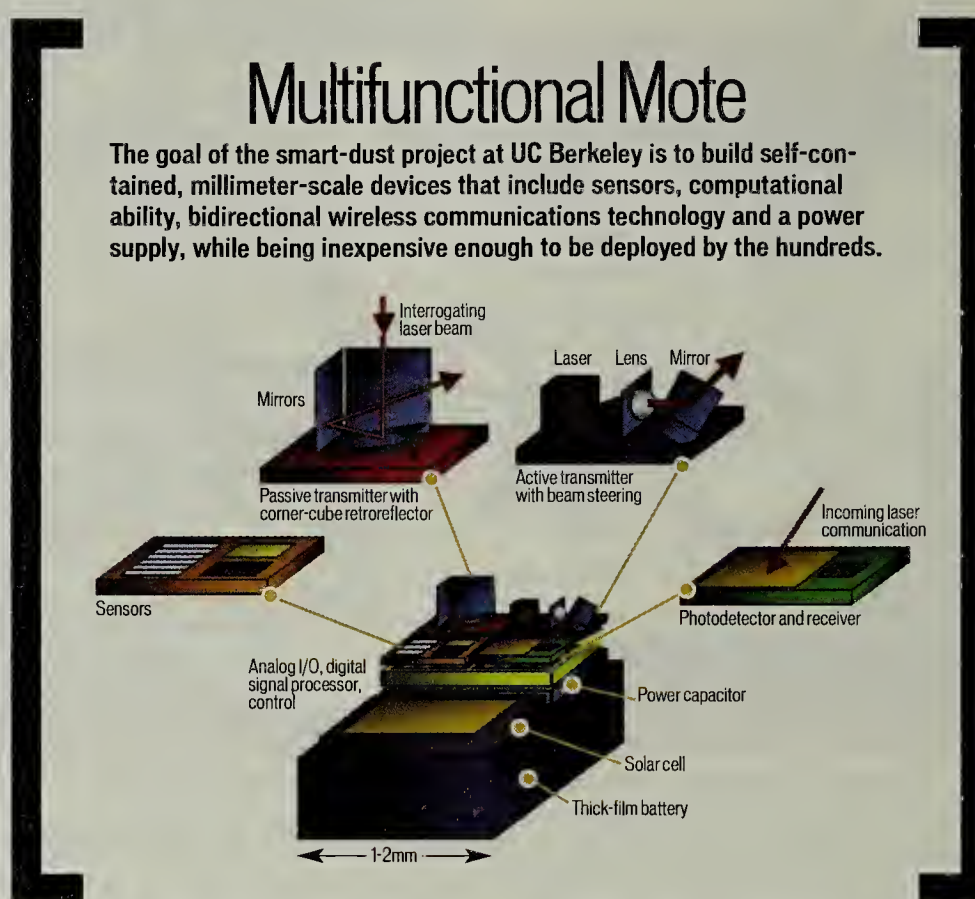
Potential commercial applications are varied, ranging from catching manufacturing defects by sensing out-of-range vibrations in industrial equipment to tracking patient movements in a hospital room.

## Design Impasse

Still, for all the promise, there are a number of technical obstacles to widespread commercial adoption. For instance, researchers are wrestling with design challenges in fusing MEMS and electronics onto a single chip, says Gary Fedder, associate professor of electrical and computer engineering and robotics at Carnegie Mellon University in Pittsburgh.

Fedder, a co-founder of Carnegie Mellon's MEMS Laboratory, has been trying to tackle these development issues through new fabrication and design techniques, but he acknowledges that the lab has quite a bit of work ahead of it.

"The paradigm has been to have a



single engineer be the champion of these systems and fuse it all together to make a [single] chip. That requires a superhuman effort," says Fedder. The lab has been developing design tool technology to aid the engineers who may ultimately design these kinds of systems, he says.

What makes all this effort worth-

while is a growing feeling among researchers that these technologies may eventually have a huge impact on society. That also helps explain why the Defense Advanced Re-

search Projects Agency began funding aspects of this work at the University of California, Berkeley, in 1998.

The goal for researchers is to get these chips down to 1mm on a side. Current motes are about 5mm, says Kristofer Pister, professor of electrical engineering at UC Berkeley, who's been

working with smart dust since 1997.

Pister is on sabbatical from the university until early 2004 at Dust Inc., a Berkeley-based developer of peer-to-peer wireless sensor networks. Dust's charter is to give developers hardware and software interfaces "that are stable, reliable and low cost," he says.

The cost of motes has been dropping steadily. Prices range from \$50 to \$100 each today, and Pister anticipates that they will fall to \$1 within five years.

He sees a plethora of potential commercial applications for smart dust, including serving as traffic sensors in congested urban areas and monitoring the power consumption of household appliances to determine whether they're operating at peak efficiency.

Pister and others are quick to point out that the size of these micromachines presents thorny power supply challenges. Ideally, researchers and

commercial contractors want to be able to deploy wireless motes that aren't tethered to power sources, and many of the systems being tested or in use today rely on miniature battery power.

"You've got this limited pile of energy in your battery, and you need to distribute that out and make it last," says Mike Horton, CEO of Crossbow Technology Inc., a San Jose-based maker of MEMS technologies whose customers include a cosmetics company that uses wireless sensors to gauge humidity levels in its warehouses for moisture-sensitive products. "You can plug it into the wall, but that kind of defeats the purpose of these autonomous sensors."

## Breakthroughs Expected

Researchers are attacking the problem in part by focusing on so-called low-power ad hoc routing protocols, which figure out how to get a message from one mote to another using the least amount of energy. Research on this kind of power has been emerging over the past two years at UC Berkeley, MIT and the University of California, Los Angeles.

"We haven't found a one-size-fits-all approach yet," Horton says. Still, he believes two near-term technical breakthroughs for these wireless sensors in the areas of power and size are poised to occur. The first involves paring the several semiconductors needed today to operate these motes down to a single semiconductor, a development Horton foresees occurring about two years from now.

On the power side, Horton points to research by UC Berkeley's Shad Roundy on fuel cells that can "scavenge" energy to make smart-dust devices run longer. This includes drawing off the ambient vibration energy generated by an industrial machine or gathering energy from low levels of light. These scavenger energy technologies might be five years off, Horton says.

While researchers and commercial developers are agog over the potential applications for smart dust, they're also careful to point out the design and power issues that still need to be resolved. Says Fedder, "There are a lot of people champing at the bit to commercialize this technology, but the technology still has to mature, and widespread use is still several years off." ▀

# SmartDust

Mighty motes for medicine, manufacturing, the military and more.  
By Thomas Hoffman

## GET THE DIRT ON DUST

For more about smart dust, go online:

Quicklink 36944  
www.computerworld.com



Irony how it takes the cutting edge  
technology of 2003 to access the  
cutting edge technology of 1973.

myEXTRA!™ Smart Connectors let you leverage your existing legacy data and logic.

“Cutting edge” doesn’t cut it. You need products that do what they say they will do. This is what we say: Our myEXTRA! Smart Connectors give you XML-based Web services — they let you get at legacy information without changing host applications. You can put all of the business data and applications locked up in mainframes to new use in hours or days, not weeks or months. We’ve spent the last 18 years making legacy data more useful. Smart Connectors are the logical next step, making data easier to get at.

Find out more. Download our free White Paper “Leveraging Legacy Applications to Serve New Business Initiatives” at [www.attachmate.com/SC7](http://www.attachmate.com/SC7).

**attachmate™**



# Insecure Servers Suffer Image Problem

**A routine security assessment shows that secure baseline images must be up to date or server administrators will ignore them.**

**By Mathias Thurman**

**T**HIS WEEK, I conducted a quick, routine vulnerability assessment of a sample of our production environment. I wasn't pleased with the results.

Ongoing vulnerability assessments are critical in determining my company's security posture at any given time.

My methodology is fairly straightforward. I use a combination of three scanning tools: Internet Scanner from Internet Security Systems Inc. in Atlanta, Retina Network Scanner from eEye Digital Security in Aliso Viejo, Calif., and Nessus, a free network scanner available at [www.nessus.org](http://www.nessus.org). With these powerful tools, I can get a comprehensive view of our IT infrastructure's vulnerabilities. I'm not suggesting that this method discovers 100% of all possible problems, but it gets close. And our other activities, such as application-level assessments, architecture reviews and code reviews, get us even closer.

All three tools are simple to use and can scan from a pre-configured list of IP addresses. For my assessment, I selected a sample from each functional area. For example, I picked Web servers, database servers, application servers, e-mail servers, Domain Name System servers, Lightweight Directory Access Protocol servers, domain controllers and a few firewalls, routers and network switches. I used the Windows Notepad applet to create a host file and entered about 40 IP addresses into the list.

We have more than 300 servers in our production environment, but I scanned only 40 of them. I don't have time to assess and review every server, and I shouldn't have to do so, since all servers for a given function are identically configured. Or so I thought.

To achieve consistency, server administrators are supposed to use a standard jump-start image and then run postinstall scripts that install additional software and make security modifications, depending

on the server's function. Our administrators are supposed to maintain and use these images whenever they build a new system, so an assessment of one type of resource should yield the same result for every server.

My assessment included five Oracle database servers, three of which had serious security holes. For example, one server was running a vulnerable version of the Secure Shell (SSH) program. Our current baseline includes the most current version of SSH, so unless someone had downgraded the current version, that Ora-

cle server hadn't been built using the standard baseline image. To my surprise, many other servers weren't built with the jump-start image either. Instead, administrators had built them using a full install of the Solaris 2.8 operating system. That includes more than 600 programs, of which we use only a small number.

Alarmed, I called a meeting of the Unix administration and security groups. It turned out that the Unix group had created a new jump-start image based on the full complement of the operating system because it was having problems with an application that needed some shared libraries that weren't part of the original, secure image.

Furthermore, the developers of the application in question weren't sure which libraries were needed for proper operation, so the Unix team had decided it would be easier to create a new image that included the full Solaris install.

But the problem went beyond just one program: The Unix group's manager cited examples of other applications that didn't work because the needed libraries weren't available. The jump-start process was clearly broken.

## The Fix

After some debate, we agreed on a procedure. First, we reviewed our baseline image. To come up with a new one, we printed out a list of all the application packages deployed during a full Solaris 2.8 installation. We then crossed out all the programs we knew weren't needed, such as support for unused hardware types and software used to play music or render graphics. Our seasoned Solaris administrators easily went through this list in less than an hour.

We then installed our Web and database server software to determine which packages and libraries they needed.

Most of the servers in our production environment fall into three areas: Web, application and database. The Web and database environments are fairly static. We know what they need to function properly, but with the application servers, we never know what will be needed for them to function properly. This is what was causing our problems.

Fortunately, Solaris includes utilities that can trace each application's system calls and determine which software and libraries it needs. Usually, we start with the baseline image and run these utilities in a lab environment, but the Unix group hadn't done this because of a lack of time and resources. My security team asked a Unix administrator to write a script we could use to run these utilities for each application and to create a report of all the needed Solaris packages and libraries.

Now we have a static Web and database tier and an application tier that starts with a better baseline jump-start build. We can then add or remove any components based on each application's needs.

We hope we can live with this methodology until the security group can find the time to do some research on commercially available tools that might assist us in this area. ▀

## WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at [mathias\\_thurman@yahoo.com](mailto:mathias_thurman@yahoo.com), or join the discussion in our forum:

**QuickLink a1590**

To find a complete archive of our Security Manager's Journals, go online to [computerworld.com/secjournal](http://computerworld.com/secjournal)

**SECURITY  
MANAGER'S  
JOURNAL**

**“**  
**The problem went beyond just one program. . . . The jump-start process was clearly broken.**

## SECURITY LOG

### Security Bookshelf

*Hacker's Challenge 2: Test Your Network Security & Forensic Skills*, by Mike Schiffman, Bill Pennington, David Pollino and Adam J. O'Donnell; McGraw-Hill Osborne Media, 2002



I was impressed by the content and challenges presented in *Hacker's Challenge 2*. The authors create hacking scenarios that are typical of those that an engineer, analyst or systems administrator might encounter. They offer a good explanation of each incident and then pose questions, with the answers and additional resources in the back of the book.

My only complaint is that the book should include an explanation of the log files presented, because some were generated with tools that many readers might not have used.

— Mathias Thurman

### InCharge Adds Security Module

System Management Arts Inc. has released InCharge for Security Infrastructure Management, a module in its InCharge service management software suite that monitors and analyzes the security status of network security devices.

The White Plains, N.Y.-based vendor says the product ships March 31. Pricing starts at \$40,000.

### MetaFrame Secures Access

Citrix Systems Inc. announced a new product that it hopes will help widen its role in the enterprise. The Fort Lauderdale, Fla.-based vendor announced its Citrix MetaFrame Secure Access Manager, which offers SSL encryption over the Internet and allows role-based access to applications and content. The product ships next quarter and will sell for \$109 per concurrent user.





#### MAGIC SERVER BEANS

Instant information infrastructure from a bean, *on demand*.

Thrives organieally in data-rich environment.

With 64 beans per poueh (bpp), you can create 64 separate servers.

Lithium-legume magie distributes power where needed.

Patented plant-and-play technology, *on demand*.

Magie Server Beans are a complete fable.

# VS.



#### THE IBM @server xSeries™ 440

Up to 16 proecessors for pay-as-you-grow eapaeity, *on demand*.

Minimizes painful upgrades and redeployment.

Logical partitioning deploys up to 64 virtual servers with VMware™ software.

Powered by Intel® Xeon™ proecessors for scalability and flexibility.

For a virtual tour or to locate a Business Partner,

visit [ibm.com/eserver/x440](http://ibm.com/eserver/x440)



@business on demand



## BRIEFS

## Workspace Boosts HR Applications

Workspace Inc. earlier this month announced that it has upgraded its suite of human resources applications. Workspace Enterprise 4.2 includes new configuration tools and enhanced support for planning and executing complex, performance-based compensation programs. The suite also features enhanced employee self-service applications and added decision-support capabilities, the Framingham, Mass.-based company said. Workspace Enterprise 4.2 will be available next month in both license-based and hosted options. Licensed software pricing for the full Workspace Enterprise 4.2 suite, including all self-service applications, ranges from \$350,000 to \$450,000 for a 10,000-employee organization. For more information, visit [www.workspace.com](http://www.workspace.com).

## Sarvega Ships New Tools for Switches

Sarvega Inc. in Burr Ridge, Ill., announced it's shipping XESOS Studio, software management tools and an interface for operating its Sarvega XPE 2000 line of switches. The software supports deployments of XML acceleration, security and routing settings and is designed to reduce administration costs. It ships at no extra cost with XPE 2000 switches.

## Pen&amp;Internet Upgrades riteMail

Pen&Internet LLC last week released riteMail 2.0 for Windows and Pocket PC systems. The software allows mobile users to transfer handwritten notes from handheld devices to desktop PCs for e-mailing, editing and printing, said the Sunnyvale, Calif.-based company. RiteMail also recognizes common freehand shapes and handwritten text, enabling that type of content to be copied into other applications. RiteMail costs \$21.95 for Pocket PC and \$24.95 for Windows.

TOMMY PETERSON

## Eyes on the Self-service Prize

IT OCCURS TO ME, at the risk of seeming immodest, that I may be the ideal customer for developers of self-service applications to keep in mind. And, as Robert L. Scheier's story ("Know Thy Customers," page 25) points out, if you're going to lure people away from person-to-person inter-

actions to less-expensive automated Web transactions, you need to know what those people are looking for.

The product of a long line of Luddites and impatient by nature, I was slow to come to online shopping or even to free transactions over the Web. I still would rather browse my local brick-and-mortar bookstore than Amazon.com.

I'm always ready to abandon almost any Internet transaction that requires me to answer more than three questions before I can get on with the business at hand. Despite the less-than-subtle efforts of the financial services firm that manages my 401(k) to force all our communications onto the Web, I have ferreted out its customer service phone number (no easy task) and use it at the first twinge of Internet frustration. Given the choice of going to the office of the nice woman in human resources to get benefits forms vs. filling them out online, I'll take the personal visit every time.

I have even been known to lash out at that most basic, ubiquitous and relatively low-tech symbol of self-service, the automated teller machine. The security camera at my local branch has caught me cursing almost every time I try to negotiate any transaction more complex than withdrawing a quick 50 bucks.

There are lots of people out there like me. That's why companies looking to implement self-service applica-

tions should pay attention to our needs.

Our resistance to self-service has nothing to do with technophobia — we can fall foolishly in love with slick technology as quickly as the next person. But we're less vulnerable to such infatuations when our time and money are at stake. At those times, we're looking for convenience, control and the

kind of flexibility of response that has proved hard to automate.

But let's take a closer look at ATMs, whose acceptance is often cited as a pertinent precedent by many self-service technology vendors. Three of the last four vendors I've spoken to acknowledged that their applications sometimes meet "cultural resistance" but pointed to ATMs as the model for the public simply "getting used to" the idea of technology replacing human interaction.

In reality, the simple range of banking functions available through your ATM is perfectly suited for automation. The bank has a database of the information it needs (account balances), and the combination of programmed card and four-digit personal identification number provides easy and effective identity authentication and access control. ATMs appeared in 1969 as cash dispensers, and though some big banks such as Citigroup and Bank of America are moving to Web ATMs with a dazzling array of potential services, the function they're most

often used for hasn't changed much.

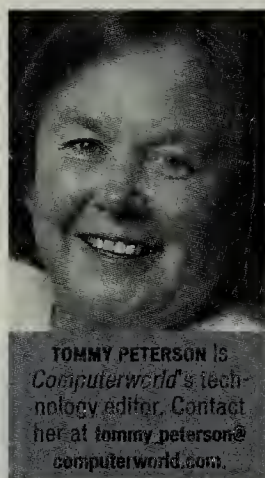
ATMs were designed to fill a simple need — round-the-clock access to cash — and they deliver (well, most of the time). The machines allow banks to keep customers happy without increasing their hours of business or staff.

But rather than allow the successful saga of the ATM to generate illusory hopes, developers of self-service technologies would do better to take away a couple of humbling lessons. After all, although about 63% of bank customers say they use ATMs, according to the American Bankers Association, less than 25% do banking online from their homes or offices.

The first of those lessons is that you've always got to figure out exactly what's in it for the user of a self-service application. The answer is usually convenience. Do the perceived user benefits outweigh any time, effort and frustration incurred while using the application? Failure to pay attention to this calculation will send users directly to the nearest potentially helpful human, the phone or somebody else's Web site, depending on the situation.

The other lesson is to simplify, simplify, simplify. Make self-service functions as straightforward as you can while still achieving your goals (saving money usually being chief among those). During development, take the time to make the application easy to negotiate: Reduce the number of fields the user needs to fill out, and minimize the amount of information he needs to provide. If a piece of information isn't central to the business function of the application, don't ask for it.

Repeat after me: Card and PIN go in, cash comes out. It's an unattainable ideal for many self-service applications, but it will help keep developers focused. ▀



TOMMY PETERSON IS Computerworld's technology editor. Contact her at [tommy.peterson@computerworld.com](mailto:tommy.peterson@computerworld.com).

## WANT OUR OPINION?

For more columns and links to our archives, go to: [www.computerworld.com/opinions](http://www.computerworld.com/opinions)





### MAGIC GENIE LAMP

Can grant three wishes. *At your command.*

Operates on oil, hand rubbing and suspended disbelief.

Brass-based. Mysterious and powerful.

Legendary tall tale, completely 100% imaginary. Genie-driven.

Magic Genie Lamp is not presently  
available in stores, now or ever.

# VS.



### THE NEW IBM *@server* iSeries™

Can grant on/off added capacity. *On demand.*

Operates easily with Windows®, Linux® and OS/400®.

Copper-based. Simple and powerful.

Easy to use, with self-healing, self-managing capabilities.

For more on iSeries and the on demand era,

visit [ibm.com/eserver/genie](http://ibm.com/eserver/genie)



*@* business on demand

'Available only on select models. IBM, the e-business logo, eServer, iSeries, OS/400 and e-business on demand are trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. Linux is a registered trademark of Linus Torvalds. Windows is a trademark of Microsoft Corporation in the United States, other countries, or both. Other company, product and service names may be trademarks or service marks of others. © 2003 IBM Corporation. All rights reserved.



# Leading Geeks Just Got Easier

## The Definitive Inside Guide to Geek Management

By Paul Glen

\$26.95 ♦ 253 pages ♦ <http://www.leadinggeeks.com>

"Paul Glen's insights and experience provide the keys to unlocking the potential [of geeks]."

—Warren Bennis  
Co-author *Geeks and Geezers*

"Leading Geeks provides a unique and pragmatic perspective of the issues faced by technologists as they create value within an organization. The ideas here will help any technical business."

—Allen Dickason  
Sr. VP and CTO, Kinko's

**L** eading Geeks challenges the conventional wisdom about leadership. This landmark book explains why the culture of technologists, the nature of technical work, and dynamics of power undermine traditional approaches to leadership...and gives you the tools to lead geeks effectively.

## Who is Likely to Become a Leader —and why

By Warren Bennis & Robert Thomas

\$26.95 ♦ 256 pages ♦ <http://www.geeksandgeezers.com>

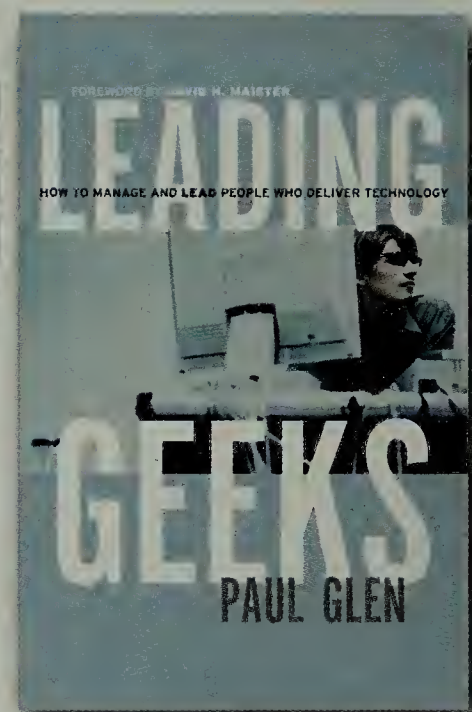
"An inspired idea, a tantalizing title, an essential book."

—Howard Gardner  
Co-Author of *Good Work: When Excellence and Ethics Meet*

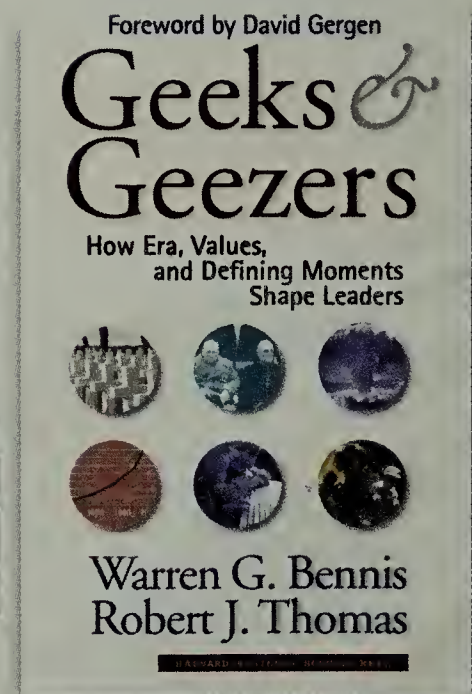
"Required reading for every aspiring leader."

—Howard Schultz  
CEO, Starbucks

**T** oday's young leaders grew up in a very different world from that of their grandparents. In a groundbreaking study of these two disparate groups—affectionately labeled "geeks" and "geezers"—the authors set out to find out how era and values shape those who lead. What they discovered was the powerful process through which leaders of any era emerge.



**Jossey Bass**  
an imprint of Wiley

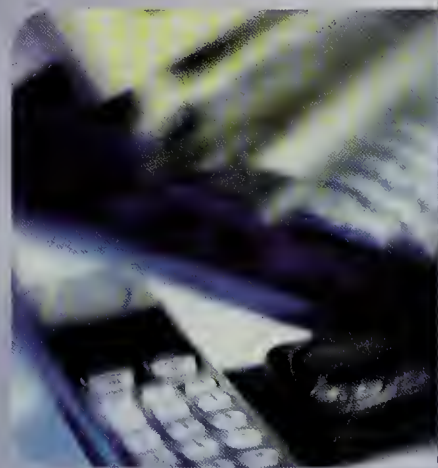


  
**HARVARD BUSINESS  
SCHOOL PRESS**



# Are wires getting in the way of your enterprise?

Attend the content-rich conference that sees an enterprise without wires



May 6-9, 2003

JW Marriott Desert Springs Resort • Palm Desert, California

## Keynote & Featured Speakers



**NANCY VICTORY**  
Asst. Secretary,  
Information &  
Communications  
U.S. Department  
of Commerce



**TONY SCOTT**  
CTO  
General Motors



**MIKE TAYLOR**  
CIO  
Todd Pacific  
Shipyards



**LEE COLAW**  
CIO/Director  
University  
Information  
Services  
Pacific Univ.



**KEN VANNER**  
VP & CIO  
Broadcom



**ANTHONY KING**  
Dir. of Software  
& Engineering  
Ventana  
Medical  
Systems



**DAVID SALZMAN**  
Program  
Manager  
United Parcel  
Service



**JIM LEAKE**  
Director of  
Business  
Strategy and  
Planning  
Getronics



**STEVE POPPE**  
CIO  
Roto-Rooter

## Conference Underwriter



Official Wireless  
LAN Provider

**proxim**  
wireless networks

## Conference Sponsors & Exhibitors (as of 3/17/03)

### PLATINUM SPONSORS

**AVAYA**



invent



**MOTOROLA**

**proxim**  
wireless networks

**symbian**

**TOSHIBA**

### GOLD SPONSORS



by intel



### CONTRIBUTING SPONSORS

**Motion** reporting

**ORACLE**

**symbol**

**TARGUS**

### SILVER SPONSORS

**Microsoft**

**PRINTme**

**SHARP**

### MEDIA & ASSOCIATION SPONSORS

**COMPUTERWORLD**

**NetworkWorld**

**FIELD FORCE**

**automation**

**HANDHELD**

media group, inc.

**NPA**

For more information, visit [www.mwwusa.com/cwt](http://www.mwwusa.com/cwt) or call 1-800-883-9090

For sponsorship information, contact Leo Leger at 1-508-820-8212 or [leo\\_leger@computerworld.com](mailto:leo_leger@computerworld.com)

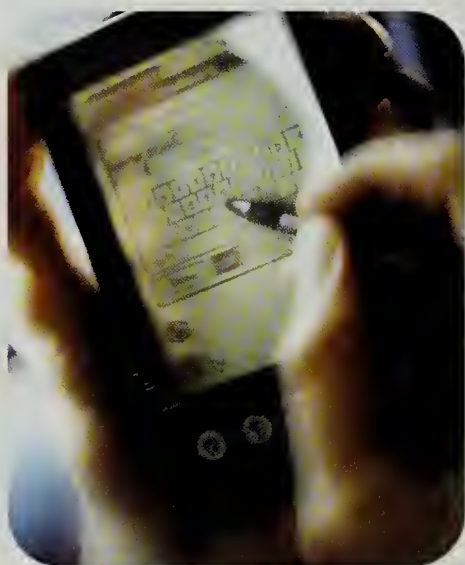


# Mobile & Wireless World

Owned & Produced by:  
**COMPUTERWORLD**

**May 6-9, 2003**

**JW Marriott Desert Springs Resort  
Palm Desert, California**



## Attend Computerworld's Executive Conference on Mobile and Wireless Technologies!



Mobile and wireless technologies push the enterprise envelope every day, from customer-facing applications all the way to the factory floor. With the proliferation of mobile and wireless applications, devices and services, how can you keep your enterprise on the cutting edge? How can you

find today's most promising mobile and wireless technologies? And how can you learn how other companies and industries apply the latest and greatest mobile and wireless tools?

Brought to you by Computerworld, you will:

- Hear, discuss and witness winning mobile and wireless strategies in the enterprise
- Gain first-hand knowledge that can enhance your own company's mobile and wireless strategy
- Examine the industry's major issues and challenges
- See developing technologies
- Network with peers
- Meet potential partners
- Converge with analysts and press
- And take home practical tips and knowledge of technologies you can implement right away

**COMPUTERWORLD  
WINNER**



2003 JESSE H. NEAL AWARD  
BEST NEWS COVERAGE  
"WIRELESS LANS"

### Keynote & Featured Speakers



#### Nancy Victory

Assistant Secretary for Information & Communications  
U.S. Department of Commerce

Nancy J. Victory has the unusual distinction of playing two roles at once in the Bush Administration. As Assistant Secretary of Commerce for Communications and Information, she reports directly to Commerce Secretary Don Evans, and oversees the agency within the Commerce Department that manages the federal government's use of spectrum. At the same time, she serves as Administrator of the National Telecommunications and Information Administration (NTIA) and reports directly to the President on communications policy matters. In each role, Assistant Secretary Victory has advocated competition, encouraged innovation, and promoted public safety and security.



#### Tony Scott

CTO  
General Motors

Anthony (Tony) E. Scott is the Chief Technology Officer for GM's Information Systems and Services (IS&S) organization. Scott is responsible for defining the information technology computing and telecommunications architecture and standards across all of GM's business globally. He provides leadership in the areas of IT architecture and standards, and emerging technology. He joined GM from Bristol-Myers Squibb where he was Vice President, Information Management, responsible for the management of the global computing infrastructure.

### Learn from User Case Studies and Perspectives



**MIKE TAYLOR**  
CIO  
Todd Pacific Shipyards



**LEE COLAW**  
CIO/Director  
University Information Services  
Pacific Univ.



**KEN VANNER**  
VP & CIO  
Broadcom



**ANTHONY KING**  
Dir. of Software & Engineering Systems  
Ventana Medical Systems



**DAVID SALZMAN**  
Program Manager  
United Parcel Service



**GERRY PURDY**  
Principal Analyst  
MobileTrax, LLC



**JIM LEAKE**  
Director of Business Strategy and Planning  
Getronics



**STEVE POPPE**  
CIO  
Roto-Rooter

For more information and to register, visit [www.computerworld.com](http://www.computerworld.com)



# CONFERENCE AGENDA subject to change

For details, updates, and to register visit [www.mwwusa.com/cwt](http://www.mwwusa.com/cwt)

## TUESDAY, MAY 6

- 1:00pm Pre-Conference Golf Outing
- 2:00pm Concurrent Workshops and Sessions:
  - Technology Workshops  
*Presented by Proxim, Motorola and AVAYA and other Workshops to be announced*
  - Industry Pipeline Sessions
  - Technology Productivity Training  
*Presented by Handheld Media Group*
- 7:00pm Pre-Conference Networking Reception

## WEDNESDAY, MAY 7

- 7:00am Buffet Breakfast
- 8:00am Welcome and Opening Remarks  
*Ron Milton, Executive Vice President, Computerworld*
- 8:15am Opening Keynote Presentation  
*Nancy Victory, Assistant Secretary for Information & Communications, U.S. Department of Commerce, Administrator of the National Information & Communications Administration*
- 9:00am Wireless Enterprise Panel  
*Panel Moderator: Bob Brewin, Mobile & Wireless Reporter, Computerworld*  
*Panel Members: Tom Dillon, Manager, Mobile & Wireless, Hilton Hotels; Joe Przepiora, CITS Manager, Cargill; Allan Thompson, President & CEO, Rappore Technologies (others to be announced)*
- 9:45am User Case Study: Wireless Security - Risk Management  
*Ken Newman, Director of Information Security & Risk Management, Deutsche Bank*
- 10:15am Break
- 10:30am Industry Insights  
*Presented by IBM*
- 11:00am Analyst Update: Mobile Goes Mainstream - What IT Needs To Know
- 11:30am Sponsor Introduced End-User Case Studies (concurrent sessions)
- Noon Networking/Birds of a Feather Luncheon
- 1:30pm Industry Innovations Panel  
*Moderator: Geny Purdy, Ph.D., Principal Analyst, MobileTrax*
- 2:15pm End-User Case Study: Effective Use of Wireless Networks  
*Mike Taylor, CIO, Todd Pacific Shipyards*
- 2:45pm Industry Insights: The Future of Voice Data Converged Wireless Networks  
*Presented by Proxim, Motorola and AVAYA*
- 3:15pm Break
- 3:30pm Industry Insights  
*Presented by Symbian*
- 4:00pm User Case Study: The CIO's Perspective of Integrating Mobile & Wireless Technology into Pacific University's Objectives - Lessons, Benefits and Red Flags  
*Lee Colaw, CIO, Pacific University*
- 4:30pm Industry Insights  
*Presented by Toshiba*
- 5:00pm Closing Remarks
- 5:30pm Solutions Showcase & Expo with Buffet Dinner

## THURSDAY, MAY 8

- 7:00am Buffet Breakfast
- 8:00am Opening Remarks
- 8:15am Opening Keynote Presentation: The Wireless Future In The Automotive World  
*Tony Scott, CTO, General Motors*
- 9:00am End-User Case Study  
*Steve Poppe, CIO, Roto-Rooter, and Todd Crauthkremer, Senior Vice President, GearWorks*
- 9:30am CTO Insights Panel
- 10:15am Break
- 10:30am Industry Insights  
*Presented by Hewlett-Packard*
- 11:00am End-User Case Study: UPS Unplugged  
*Dave Salzman, Program Manager, United Parcel Service*
- 11:30am Sponsor Introduced End-User Case Studies (concurrent sessions)
- Noon Solutions Showcase & Expo with Buffet Lunch
- 1:30pm Industry Insights  
*Jacob Christfort, CTO, Oracle*
- 2:00pm End-User Case Study  
*Ken Venner, CIO, Broadcom*
- 2:30pm Industry Insights  
*Presented by IBM*
- 3:00pm Break
- 3:15pm Technology "Spotlight" - Innovation On Stage  
*Featuring demonstrations by EFI/PrintME, Credant, Synchrologic, NetMotion and others to be announced*
- 4:15pm End-User Case Studies (concurrent sessions)  
*Leveraging Advanced Technologies to Support Mobile Workers*  
*Jim Leake, Director of Business Strategy and Planning, Getronics*  
*Wireless Locating Systems - The Technology for Large ROI*  
*Tim Van de Merwe, Internal Logistics Manager, Associated Food Stores*
- 4:45pm End-User Case Studies (concurrent sessions)  
*Access to Corporate Data in Wireless Environments*  
*Anthony King, Director of Software and Engineering Systems, Ventana Medical Systems*  
*"Pumping" The Most Out of Your Database with Wireless*  
*Eddie Hung, Manager, Advance Research and Technologies, City of Richmond, BC, Canada*
- 7:00pm Gala Evening  
*"Best Practices in Mobile & Wireless" Awards Ceremony*

## FRIDAY, MAY 9

- 8:00am Buffet Breakfast
- 8:30am Concurrent Workshops and Sessions:
  - Technology Workshops  
*Presented by IBM and other Workshops to be announced*
  - Industry Pipeline Sessions
- Noon Conference Concludes

## Travel and Accommodations

IDG Travel is the official travel company for Mobile & Wireless World. They are your one-stop shop for exclusive discounted rates on hotel accommodations.

To reserve your accommodations:  
visit [www.etcentral.com](http://www.etcentral.com) OR  
call 1-800-340-2262 (or 1-508-820-8159)



## Pre-Conference Golf Outing

### Complimentary for Registered IT Users

The Pre-Conference Golf Outing at The Palms Course, located at the JW Marriott Desert Springs Resort, is complimentary (\$165 value) for registered IT End-Users. (Other participants, including sponsors and vendors, may play on an "as available" basis and are responsible for all applicable golf outing expenses.)

For details: contact Chris Leger at 1-508-820-8277



[www.mwwusa.com/cwt](http://www.mwwusa.com/cwt) or call 1-800-883-9090





May 6-9, 2003

JW Marriott Desert  
Springs Resort

Palm Desert, California

# Application for Conference Registration

## TO REGISTER:

- Fax this form to 508-626-8524
- Or register online at [www.mwwusa.com/cwt](http://www.mwwusa.com/cwt)
- You will receive a confirmation via email

## QUESTIONS?

- Call: Pam Malingowski at 800-883-9090
- Email: [mwwreg@computerworld.com](mailto:mwwreg@computerworld.com)

CODE: CWT

## OPTIONS:

All dollar amounts are in U.S. funds; registrations include full access to all sessions, the Expo, meals and receptions. Transportation and hotel accommodations are your responsibility and can be reserved by visiting [www.etcentral.com](http://www.etcentral.com), calling 1-800-340-2262, or emailing [eventhousing@idg.com](mailto:eventhousing@idg.com)

**Earlybird  
Registration**  
(through March 31, 2003)

**Pre-Conference  
Registration**  
(April 1 through May 1, 2003)

**Full/On-Site  
Registration**  
(on or after May 2, 2003)

IT End-User: \*

☐ \$995

☐ \$1,295

☐ \$1,495

Non-Sponsoring Vendor: \*\*

☐ \$5,000

☐ \$5,000

☐ \$5,000

\* IT End-Users are defined as those who are attending Computerworld's Mobile & Wireless World with an intent (and an IT spending budget) to potentially buy/purchase hardware/software/services/etc. from our conference sponsors and exhibitors. As such, account representatives/business development from any company, analysts, venture capitalists, and anyone else attending who does not have IT purchasing influence within their organization are excluded from the "IT End-User" designation. Enforcement of this interpretation and policy is at the sole discretion of Computerworld. Questions? Please call 1-800-883-9090.

\*\* Vendors are encouraged to participate in Computerworld's Mobile & Wireless World through sponsorship. (Details are available by calling Leo Leger at 1-508-820-8212.) Alternatively, vendors (as well as venture capitalists, equity analysts, and other "non-IT end-user" professionals as defined by Computerworld), may apply for registration at the "non-sponsoring vendor" rate. Determination of what constitutes a "non-sponsoring vendor" registration is at the sole discretion of Computerworld.

## Registration Information: (This section must be completed in order to process your application)

First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Last Name: \_\_\_\_\_

Title: \_\_\_\_\_ Company: \_\_\_\_\_

Street Address: \_\_\_\_\_ Suite, Apt., etc.: \_\_\_\_\_

City: \_\_\_\_\_ State/Prov: \_\_\_\_\_ Zip/Postal Code: \_\_\_\_\_

Country: \_\_\_\_\_ Phone Number: \_\_\_\_\_ Extension: \_\_\_\_\_

Fax Number: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Badge Name: \_\_\_\_\_ ☐ Special Services Required? (Please attach written description)

Would you like to receive information about playing in the golf outing on Tuesday, May 6? ☐ Yes ☐ No

Please indicate your preferred conference shirt size: ☐ S ☐ M ☐ L ☐ XL ☐ XXL ☐ XXXL

## Attendee Profile: (This section must be completed in order to process your application)

### Your Organization's Business / Industry?

(Check Only One)

- ☐ Transportation / Utilities
- ☐ Mining / Oil / Gas
- ☐ Non-Profit / Trade Association
- ☐ Media / Publishing
- ☐ Banking
- ☐ Finance
- ☐ Accounting
- ☐ Insurance
- ☐ Real Estate
- ☐ Telecommunications
- ☐ Wholesale / Retail (non-computer)
- ☐ Computer Service Provider
- ☐ Advertising / Marketing / Public Relations
- ☐ Entertainment
- ☐ Education
- ☐ Food Industry
- ☐ Government / Military
- ☐ Healthcare / Medical Services
- ☐ Travel / Hospitality / Recreation
- ☐ Manufacturing (non-IT)
- ☐ Automobile
- ☐ Transportation / Utilities / Energy
- ☐ Computers, Communications or Peripheral Equipment
- ☐ or Software Manufacturing
- ☐ Agriculture / Forestry / Fisheries
- ☐ Other

### Your Primary Job Title / Function?

(Check Only One)

- ☐ CIO, CTO
- ☐ Vice President of IT
- ☐ Director, Manager, Supervisor of IT
- ☐ Other IS / IT Manager
- ☐ Chairman, CEO, President, COO
- ☐ CFO, Controller, Treasurer
- ☐ CM, VP, Director
- ☐ Other Corporate / Business Manager
- ☐ Corporate / Business Staff
- ☐ Consultant

### Your Personal IT/IS Spending Authority?

- ☐ \$5 million+
- ☐ \$1 million - \$4.9 million
- ☐ \$500,000 - \$999,999
- ☐ \$100,000 - \$499,999
- ☐ Under \$100,000
- ☐ None

### Number of Employees (ALL Locations)?

- ☐ 5,000+
- ☐ 1,000 - 4,999
- ☐ 500 - 999
- ☐ Under 500

### What is your Company IT/IS Budget?

- ☐ Over \$1 billion
- ☐ \$100 million - \$99.9 million
- ☐ \$10 million - \$99.9 million
- ☐ \$1 million - 9.9 million
- ☐ Less than \$1 million
- ☐ None

### What is Your Organization's Primary Vendor for Servers?

- ☐ Dell
- ☐ Hewlett-Packard / Compaq
- ☐ Hitachi
- ☐ IBM
- ☐ Sun
- ☐ Other

### Your Organization's Enterprise Standard for Mobile Device Management Software?

- ☐ Aether Systems
- ☐ Altiris
- ☐ Computer Associates
- ☐ Extended Systems
- ☐ Hewlett-Packard / Compaq
- ☐ IBM Tivoli
- ☐ Landesk Software
- ☐ Managesoft
- ☐ Marimba
- ☐ mFormation
- ☐ Microsoft
- ☐ Mobile Automation
- ☐ Novadigm
- ☐ Novell
- ☐ ON Technology
- ☐ Pumatech
- ☐ Starfish
- ☐ Synchrologic
- ☐ Wavelink
- ☐ XcellNet
- ☐ Other
- ☐ No Standard Yet Established

## Payment Method

☐ Check Enclosed (checks must be received by April 29, 2003 payable to: Computerworld)

Mail to: Computerworld, Attn: Pam Malingowski, 500 Old Connecticut Path, Framingham, MA 01701

☐ American Express ☐ VISA ☐ MasterCard

Account Number: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Card Holder Name: \_\_\_\_\_

Signature of Card Holder: \_\_\_\_\_

## Cancellation Policy

(All of the below options require written notification.)

In the event of cancellation, the registrant has three options:

- 1) He or she may substitute another attendee for this conference
- 2) He or she may transfer this registration to the next Mobile & Wireless World, if written notice is received by April 17, 2003.
- 3) The registration fee will be refunded, less \$250 service charge, if written notice is received by April 17, 2003.

Please send cancellation requests via email to [mwwreg@computerworld.com](mailto:mwwreg@computerworld.com) or call 1-800-883-9090 for assistance.

Computerworld reserves the right to limit and/or refuse any registration for any reason.



## So You Want to Be a CTO

Just what a CTO does on a day-to-day basis depends on who hires you, whom you report to and whether you have budget authority. Lending Tree CTO Rick Stiegler (far right) is in the minority in that he reports to his company's CIO, Steve Campbell. **Page 42**



## PEER TO PEERS Ten Ways To Increase Your IT Value

**Lesson No. 1: Execution is everything.** Don't get embroiled in endless analysis, and take risks, writes Matthew Krieger, associate director of global network services at Reader's Digest. **Page 52**

## QUOTE OF THE WEEK

**“**When people rip out everything and put in an all-new [supply-chain] system, it's the equivalent of a heart, lung and liver transplant all at once. It's so risky that you should never do it unless the patient is going to die anyway.”

- Mike Hugos, CIO, Network Services Co.



POLLY BECKER

## CASE STUDY

INGERSOLL-RAND CO., a manufacturer of industrial equipment, is always seeking to reduce its supply chain costs. And like most big companies, the \$8 billion company tends to focus its efforts on its 20 largest suppliers — which, in line with a widely accepted rule of thumb, account for about 80% of procurement expenditures.

But two years ago, driven by the economic slump that persists today, Woodcliff Lake, N.J.-based Ingersoll-Rand began paying more attention to its smaller suppliers in an intensified effort to drive down costs. The manufacturing company learned there were significant savings to be had in this area simply because it hadn't been scrutinized before. For example, Ingersoll-Rand found that while major suppliers were bending over backward to reduce prices, some smaller ones had actually passed along increases of up to 10% annually — during years when inflation was practically nonexistent.

Smaller suppliers were also more likely to have poor on-time records, which added costs by forcing Ingersoll-Rand to pay premium freight charges for last-minute shipping. Mom-and-pop trading partners often played it fast and loose in ways that would never be tolerated among larger suppliers. The company questioned peers, including competitors, and discovered that it wasn't alone; other manufacturers were also leaving savings on the table where their smaller trading partners were concerned.

Its new determination to cut supply chain costs prompted Ingersoll-Rand to forge an alliance with SupplyWorks Inc., a Bedford, Mass.-based vendor of supplier-relationship management software, and with the Worldwide Logistics Solutions business unit of freight company Roberson Transportation. The three formed a procurement outsourcing business based in Torrington, Conn., called The 21st Supplier, which aims to cut companies' costs of doing business with thousands of small yet indispensable suppliers.

Champaign, Ill.-based Roberson's logistics division had a long-standing relationship with Ingersoll-Rand. That partnership persuaded The 21st Supplier that

*Continued on page 40*

# MANAGING THE OTHER 20%

Ingersoll-Rand looks to reap big savings by scrutinizing its smallest suppliers. **By Steve Ulfelder**



# MANAGING THE OTHER 20%

Continued from page 39

Roberson's technology and capabilities would mesh well with the SupplyWorks software.

Companies that sign on as customers swap their smaller suppliers — which may number in the hundreds — for just one: The 21st Supplier. Leveraging Ingersoll-Rand's procurement experience, personnel and massive supply chain network, the outsourcer moves in, takes over the management of clients' relationships with small suppliers and agrees to deliver cost reductions. Operating in full start-up mode, The 21st Supplier has nine full-timers and plans to add staffers as needed. The company views as potential clients all manufacturers that have annual sales over \$500 million and assemble discrete components — such as automakers and electronics companies.

The 21st Supplier's first customer was Hussmann Corp., a \$600 million Ingersoll-Rand unit in Bridgeton, Mo., that manufactures commercial refrigeration systems. According to Bill Lindquist, business unit leader at The 21st Supplier, Hussmann has seen cost reductions of 5% to 15% in several areas: Freight charges are down; inventories have been cut through tighter cycle times; suppliers have been consolidated (and supplier performance is better thanks to improved measurement and incentives); and shortages and line stoppages have been reduced. "And we haven't even rolled up our sleeves yet," he says.

Tony Merlo, Hussmann's director of strategic sourcing, says that previously, no one in the company had a program to address that lower 20% of the spending, which goes to about 60% of Hussmann's suppliers. "It makes sense to take and manage that group, and it's working," he says.

A diversified manufacturing conglomerate, Ingersoll-Rand's business units make everything from Schlage and Kryptonite locks to Bobcat earthmovers and Thermo King climate-control systems. All told, its direct procurement spending tallies \$4 billion a year in 400 commodity categories. ("Direct" refers to components that actually go into products, as opposed to indirect materials such as office supplies.)

Naturally, managing the supply chain is critical to such an enterprise. Ingersoll-Rand urges its business units to continually evaluate their suppliers, sorting them into a four-quadrant matrix like that favored by Gartner Inc. (see chart). The variables in the matrix

are risk (to the manufacturer, should it decide to drop a given supplier) and spending.

Prior to the formation of The 21st Supplier, Ingersoll-Rand evaluated offerings from several supplier-relationship management vendors and determined that SupplyWorks' Max, a hosted application, could serve as business units' technology enabler. In addition, Ingersoll-Rand figured that its business units could gain economies of scale by standardizing on Roberson to manage freight requirements wherever possible.

SupplyWorks aims to help enterprises work with tens of thousands of smaller trading partners on matters both tactical and strategic. In the former category, the software performs tasks such as issuing alerts when the purchasing company is close to pricing trip points. "It will say, 'Hey, you're ordering 140 units here, and at 150, you get a price break,'" says SupplyWorks CEO Jeff Herrmann.

This type of information tends to be watched closely in the case of strategic suppliers but often slips through the cracks with smaller ones for two reasons. First, small suppliers are most likely to be managed manually with hard-copy forms. Second, businesses understandably assign their top account representatives to major suppliers; the mom-and-pop outfits are often handled by new — or simply less experienced — reps, who don't catch everything they should catch.

By encouraging business units to scrutinize their smaller suppliers the same way they do their biggest vendors, Lindquist says, Ingersoll-Rand pared down the total number of suppliers and cut costs "significantly" in addition to reducing inventory.

But that doesn't mean the process was smooth as silk or that there's no more work to do. "Within Ingersoll-Rand, we need to make more progress,"

Lindquist says. The conglomerate has 12 major business units and many smaller ones, and "because they're all so independent, each unit isn't much different than a separate company." (The 21st Supplier has met with other Ingersoll-Rand business units about outsourcing, but Lindquist says there is no companywide mandate to sign on.)

For example, while Ingersoll-Rand has standardized on Oracle Corp.'s software for financials, each unit may have its own enterprise resource planning software. This makes sharing data across units difficult, which in turn means some units are unaware of potential gains to be had in the supply chain. The company has begun to address this issue by creating cross-unit "centers of excellence" for ferreting out exactly this type of data, but it's too early to tell what effect those centers will have.

## SPINNING PROFITS

Not all IT spin-offs generate profits. Read more at our Web site:

 **QuickLink 36871**  
computerworld.com

## Guinea Pig

Several factors made Hussmann a sound testbed for The 21st Supplier's service. As Ingersoll-Rand's most recently purchased business unit, it didn't have Oracle Financials software in place. Moreover, its IT system was a

mess, with no fewer than five major operating systems at its sole facility. Lindquist says the integration challenges led to changes in The 21st Supplier's business model.

For example, a full-time programmer was hired to work on integration, with Hussmann and The 21st Supplier splitting the unforeseen expense — which will now be budgeted in for every engagement. And the outsourcer found that the best way to address Hussmann's security and access concerns was to lease a server with a firewall, thus establishing a buffer zone that determined which data could be shared and which was off-limits. "That gives [Hussmann] a comfort level," Lindquist says. "We're going to do that from now on" with all customers, both inside and outside Ingersoll-Rand, he adds.

Merlo says Hussmann started small, testing the integration and shifting a small group of its low-risk/low-spend suppliers to The 21st Supplier's oversight. Results were positive. "Next week, I present to the next group," Merlo says, at which time most of Hussmann's suppliers outside the top 20 — about 70 vendors in all — will have been transferred over.

Although Hussmann's 5% to 15% savings are persuasive, outsourcing supplier relationship management may not be for everyone. Gerald McNerney, a senior analyst at Boston-based AMR Research Inc., says there's "clearly a lot of value" to be found in outsourcing procurement. However, he adds, any logistics outsourcing can be "disruptive," to say the least. The thought of a factory floor being brought to its knees — or a standstill — by an outsourcer's error is simply too risky for many manufacturers to consider. "Even though it can save them a few bucks, companies can be reluctant to enter these [outsourcing] relationships," McNerney says.

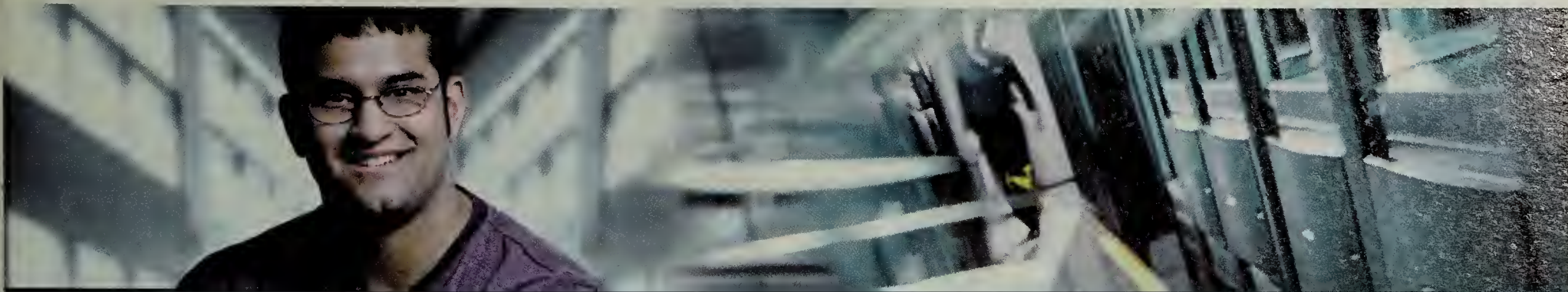
In light of The 21st Supplier's promises and Hussmann's early experience, though, enterprises may want to take a second look. ▀

## Ingersoll-Rand Suppliers

	High Risk	Low Risk
High Spend	These are Ingersoll-Rand business units' strategic supply chain partners; the manufacturers work closely with them to drive out costs wherever possible.	These are providers of commodity items furnished by several suppliers. Ingersoll-Rand units cut costs by consolidating buys with other business units, buying from countries with low labor costs and conducting reverse auctions in which multiple suppliers are asked to name their best prices.
Low Spend	Collectively, these vendors represent only a small portion of overall spending on purchases, but they furnish strategic, one-of-a-kind components that Ingersoll-Rand business units must have for production.	A catchall category for all other suppliers. They represent a hodgepodge of mom-and-pop shops that, because business units spend little with them, have often flown under the cost-cutting radar.

Ulfelder is a freelance writer in Southboro, Mass. Contact him at [sulfelder@charter.net](mailto:sulfelder@charter.net).





# Looking Deeper, Working Smarter

An intelligent infrastructure provides **end-to-end QoS** for superior performance and control.

Every business has its priorities. So why not share them with your network? When you run your applications over an intelligent network infrastructure, you can ensure every data packet is handled according to the priorities and policies you set, bringing your network operations into perfect sync with your business goals.

Cisco intelligent switches and routers come equipped with the most sophisticated quality-of-service features available, allowing you to deliver predictable, measurable, even guaranteed levels of performance across the LAN and WAN.

An intelligent infrastructure looks deeper into network traffic, identifying the users and applications behind the streams of data. As a result, it can classify and mark packets to make sure your most pressing needs are met first, without stranding anyone or anything else. IP voice and video applications, for example, can be given precedence over less time-sensitive applications, eliminating the delays and packet loss that would otherwise get in the way of clear, cost-effective communication.

An intelligent infrastructure also makes more efficient use of bandwidth, which becomes particularly important as applications and services are extended across the WAN, where bandwidth is a scarce and pricey commodity. Applying QoS can significantly improve the response times of your most demanding applications, without increasing your company's bandwidth costs.

Cisco's QoS features are based on advanced networking protocols, which are seamlessly integrated with each other and the hardware through Cisco IOS® Software, the operating system that unifies all Cisco switches and routers and provides most of the intelligence in the network.

Cisco management software lets you can take full advantage of these capabilities without being an expert, and will even automatically apply best practices across all network devices. These management tools can help your company become more agile, too, making it easy to adjust to changing priorities. So easy, in fact, that policies can shift according to time of day, accommodating different business needs and patterns of network usage.

The end result is a network optimized to make your company as productive, efficient, and profitable as possible. And after all, isn't that the top priority?

## Advanced QoS mechanisms offer unprecedented control

Cisco intelligent switches and routers provide the industry's most comprehensive quality-of-service features, enabling you to maintain predictable performance levels and support delay-sensitive IP voice and video communications across the LAN and WAN. Features include:

**Classification:** Allows the network to distinguish different types of traffic based on the applications involved, then sort them according to established priorities.

**Marking:** Flags data packets to ensure they are handled based on their relative importance to your business goals, so the most critical needs are met first.

**Policing:** Limits traffic flows to defined rates so large files won't swamp the network and degrade application performance levels.

**Buffering:** Holds low-priority packets while urgent traffic moves ahead, which conserves bandwidth by avoiding the need to retransmit data.

**Scheduling:** Controls the timely delivery of traffic and alleviates congestion so applications can maintain peak performance levels.

Learn how the advanced QoS features of Cisco switches and routers can deliver a greater return on your investments in technology.

[www.nvifusion.com/cisco/qos](http://www.nvifusion.com/cisco/qos)





**I**N JANUARY 2001, three stories in *Computerworld* mentioned a chief technology officer, or CTO. In January 2003, 26 stories did. The CTO is clearly becoming more common, but it's a difficult role to pin down. CTOs can be technology gurus, visionaries, infrastructure experts or policy enforcers, and contrary to popular belief, they don't usually work for the CIO. "If you talk to six people, you'll get six definitions of the CTO," says John J. Davis, president of John J. Davis & Associates Inc., an IT executive search firm in New York.

To get a feel for what CTOs are really about, it helps to look not only at their work, but also at the human and financial dynamics around them.

Although the role is becoming more common, CTOs are found in only 37% of companies, according to a 2002 survey of several hundred midsize to large companies by Cutter Consortium in Arlington, Mass. The CIO may be involved in recruiting and hiring the CTO, but most CTOs report to another senior executive, such as the CEO or the chief financial officer, and they fill a variety of roles.

In large companies, the CIO's increasing emphasis on business — often on a worldwide scale — may leave no one minding the IT store, Davis says. In those cases, the CTO is brought in to keep an eye on infrastructure and technology.

That's the situation at Foster City, Calif.-based Inovant Inc., where Scott Thompson is in the process of hiring a CTO. "When you're running a big global business, there are a lot of [infrastructure] decisions that have to be made on a daily basis," explains Thompson, who is executive vice president for technology solutions and de facto CIO at the wholly owned transaction-processing subsidiary of Visa International Inc.

"My job is about translating business plans into technology priorities and creating that constant linkage back to the business and the strategy of the business," he explains. "That translates into a series of initiatives and projects and a development agenda."

In contrast, the CTO, who will report to Thompson, will have "day-in and day-out responsibility for global enterprise architecture, making sure all our transactions in nearly 200 countries always work," he says.

In start-ups, the CTO often fills a catchall technology role. "The smaller the company, the less they can afford the luxury of a guy [who is] more into

strategy than technology delivery," Davis says. "So they get someone with technology as the prime skill set."

Rick Stiegler has been CTO at Lending Tree Inc. in Charlotte, N.C., since the mortgage company's founding in 1997. In the early days, because the staff was small, his job ranged from software design and configuration management to business analysis and technical presentations for investors.

Now, with 250 employees and a technology department of more than 100, the company has hired CIO Steve Campbell, and Stiegler is moving away from business concerns. Stiegler provides architectural guidance, reviews the technical design for all projects and examines the technical implications of strategic initiatives.

Stiegler, who now reports to Campbell, works primarily on architecture. Campbell does "all the hard stuff," including handling vendors and purchas-

**"I've done enough of wearing all the hats. I want to go back to the cool stuff."**

.....  
RICK STIEGLER, CTO, LENDING TREE INC.

ing technology, Stiegler says. "He manages air cover to the business," he says. "When I'm trying to figure out a bottleneck in the database, he's explaining to the business what's going on and when we'll get it going again."

Stiegler checks with Campbell on any proposed adjustments in architecture or technical philosophy. If they disagree, Stiegler says, "we arm-wrestle, and I usually lose." But it almost never comes to that. "When we disagree, it's usually because one of us has incorrect data," Stiegler says. "Once we both have the same facts, we arrive at the same conclusion."

Stiegler enjoys having a CIO to handle the business aspects of technology. "I've done enough of wearing all the hats," he says. "I want to go back to the cool stuff."

At some companies, the CTO is steeped in the cool stuff as the technology visionary. "Companies often bring CTOs in to develop a longer-term technology strategy, one the CIO just doesn't have time to develop," said Steve Andriole, a consultant at Cutter Consortium.

That's the case at Black & Veatch Corp., an engineering, construction and consulting company in Kansas City, Mo., and one of the 100 largest private corporations in the U.S. CTO John G. Voeller is a lone visionary whose job transcends traditional IT boundaries. "I don't just look at the technology of my enterprise," he says. "I look far beyond IT, at nanotechnologies, biotech and other domains." His

Just what a CTO does depends on who hires you, whom you report to and whether you have budget authority. By Kathleen Melymuka

**SO YOU  
WANT TO BE A  
CTO**



mission is to understand the goals of the business and of its clients, anticipate their needs and guide them toward technologies of value.

As Black & Veatch evolved from a partnership to a corporation in the 1990s, Voeller, who used to head IT, passed the reins to Bob Fine, a business-oriented CIO who had "fought the corporate wars." As CIO, Fine has improved vendor relationships, cut costs and streamlined IT activities. CTO Voeller concentrates on the technology vision. Both report to the chief administrative officer, but Fine has the power of the purse. All IT purchases are made through his office, and he manages vendors.

Andriole says that in companies where the CIO and CTO report to a senior executive, their different focuses frequently cause friction because they compete for funding. "The tension comes from having the CTO always pushing the envelope, while the CIO is worrying about making the train run on time," he says.

Usually, the CTO and the CIO share the technology budget, Andriole says, and tension can arise if the CTO seeks to divert money from "putting out brush fires" to building new architec-

## HOW THEY GOT THERE

**JOHN G. VOELLER:** As a mechanical engineer at Black & Veatch, he took a short assignment to solve a problem in MIS and never left. He became partner in charge of technology in the early '80s and CTO in the early '90s.

**DEBRA DOMEYER:** Worked on computer systems and encrypted satellite technology at the White House and on Capitol Hill. Managed the White House Office of Automation, installing the first PCs in the West Wing in 1984. Worked in IT at financial services companies.

Served as CIO at Times Mirror Corp. and Pacific Gas & Electric Co.

**RICK STIEGLER:** Served as vice president of advanced technology at Greenwich Capital Markets Inc. and was a vice president of IT at Morgan Stanley.

**CATHY BRUNE:** Started as a data center tapes moulder at Allstate. Moved to business positions in claims, marketing and pricing. Served as regional vice president of sales, director of the call center and vice president for infrastructure.

tures. "They [CTOs] hate to spend money on things like life support for old systems, so they'll recommend diverting funds from those server upgrades to build the architecture to exploit Web services," he says.

But Voeller says that's not the case at Black & Veatch. "We work as a very good team because we respect each other's ideas," he says. "Our executives are receptive; they believe in and reverse imagination."

The key to a good CTO/CIO relationship, Voeller says, is "clear delineation of roles and responsibilities and a reward system based on doing these well." A sure road to ruin, he adds, would be "a CIO with a technology bent who secretly wants to do the CTO job — or vice versa."

The fact that Voeller doesn't report to the CIO isn't unusual. The Cutter survey found that 74% of CTOs don't.

At Allstate Insurance Co. in North-

brook, Ill., CTO Cathy Brune reports to the chairman, and she is the undisputed technology leader. "I was made a senior VP and CTO because we wanted people to understand that I am in charge of technology, and I will make calls and break the ties," she says. Her role is to manage overall architecture, infrastructure and security, a task made trickier by the fact that Allstate's two main divisions have their own IT groups, CIOs and technology budgets.

As Allstate's first CTO, Brune needs to reconcile the IT wish lists of the two business units with the technical standards she's hammering into place. "I cut the baby in half between the two businesses if necessary," she says. In other words, if one business wants one sort of infrastructure/architecture and the other wants another, she decides which will be the corporate standard. "The business unit presidents listen to me," Brune says.

Before she became CTO, there was one CIO who owned the IT budget, and the business unit presidents had to come to him for technology funding. Now the two businesses have their own IT budgets, and they can choose the applications they need to drive their strategies — as long as those follow the CTO's technology standards. Infrastructure, governance, security and companywide architecture belong to Brune.

Because Brune reports directly to Allstate's chairman, she could wield a big stick. But instead, she is persuading the CIOs and their business unit presidents to do things her way. She acknowledges, though, that this entails a lot of "mud wrestling."

"This job is a lot more relationship-driven than I would have imagined," Brune says. "But by doing this early, we get buy-in from everyone around our tech strategy."

The inevitable friction between CTOs and CIOs is a good thing, Andriole says, because it makes companies consider technology trade-offs. "It forces you to think about the implications of putting out those brush fires for what you have to be doing in two to three years," he explains. "It sets up a great dialogue in the corporation." ■

Melymuka is a Computerworld contributing writer. Contact her at [kmelymuka@earthlink.net](mailto:kmelymuka@earthlink.net).

## WEARING BOTH HATS

Read about the hybrid role of CTOs who work at Web-based companies:

QuickLink 36887  
[www.computerworld.com](http://www.computerworld.com)



LENDING TREE CTO RICK STIEGLER (right) works on architecture while CIO Steve Campbell (left) does "all the hard stuff."

LYNNE SILER



## SUPPLY CHAIN ADVICE:

# Tap Computers for The 'Dog Work'



*Streamlining a supply chain isn't easy, but the simpler the technology involved, the better. The reason: "Most of us are regular folks. If you have to be a genius to figure something out, we're doomed." So says Mike Hugos, CIO of Network Services Co., a \$6.8 bil-*

*lion distribution cooperative company in Chicago suburb Mount Prospect. In his new book, Essentials of Supply Chain Management (John Wiley & Sons Inc., 2003), Hugos lays out how to decide what kind of supply chain technology your company needs and how much to spend to get it. Hugos recently spoke with Computerworld's Julia King.*

**As a CIO, how did you get involved in the supply chain process?** We're a co-op. There are 75 owner companies, each with an individual ERP [enterprise resource planning] system. When I came on in the fall of '99, we were updating our strategic plan. The owner companies made it very clear to me to not even suggest that we all standardize on SAP or Oracle or some other software.

Meanwhile, some of our big customers — which include Baskin-Robbins, all of the Starbucks stores — wanted to centralize their procurement operations. They didn't want to phone and fax orders. They were creating electronic order management systems that we needed to plug into and then route orders to our members to fill. Our customers wanted statement billing. They wanted a seamless coordinated supply chain. They said to me, "You figure it out."

**Where do you start such an obviously huge project?** The first thing I like to do is on a big sheet of white paper draw out the sequence of activities as you know your supply chain. Where you don't know things, put in a question mark. If you're a manufacturer, look back to

raw material providers. Then, look forward to your customer. I learned a long time ago in sales to look at what your customer's customer is doing. Lay that out as part of the major flow of activities. I've found again and again that if everyone has a common visual framework to look at, and then you start plugging details into slots on that framework, a picture will emerge.

**And then what?** Steady as she goes. Solve a piece at a time. It's a lesson that didn't play well in the '90s. When people rip out everything and put in an all-new [supply chain] system, it's the equivalent of a heart, lung and liver transplant all at once. It's so risky that you should never do it unless the patient is going to die anyway. Instead, you ought to take a look at the supply chain diagram — a simple circle-and-arrow, basic reference diagram — and ask, "Where are the bottlenecks right now?" Maybe the bottleneck is procurement or inventory control or forecasting. Identify the worst bottlenecks, then come up with point-specific [IT] solutions to those bottlenecks. Fifty-million-dollar SAP solutions played well in the '90s, but I don't think they were ever good practices.

**How come?** We spent the last 10 years with massive all-in-one systems. I think the answers are there for everyone to see. They don't work very often, and the world changes so quickly that you'll come up with a new solution to an old business model. And if the people who have to use a new system either don't buy into it or feel it's simply a prelude to being laid off or the

equivalent of speeding up the assembly line, they'll take a passive-aggressive attitude and do everything from spill coffee on the keyboard to feed the system goofy data. As soon as that happens, you can typically blame the technologists who are so absorbed in technology and the least politically aware that they make very easy scapegoats.

**So, are you saying to solve the bottlenecks one by one, with different software, and worry later about integrating those software applications?** There's something called the miracle of the ASCII file. I tell members I will never stand up in front of a technology organization and brag about sending encrypted ASCII files over the Internet, but it works. Every system has batch-import capability, and that's where I believe in about 2001 a new acronym appeared called EAI [enterprise application integration]. EAI is really about passing ASCII files across separate applications. It's not that we didn't know how to do that in the late

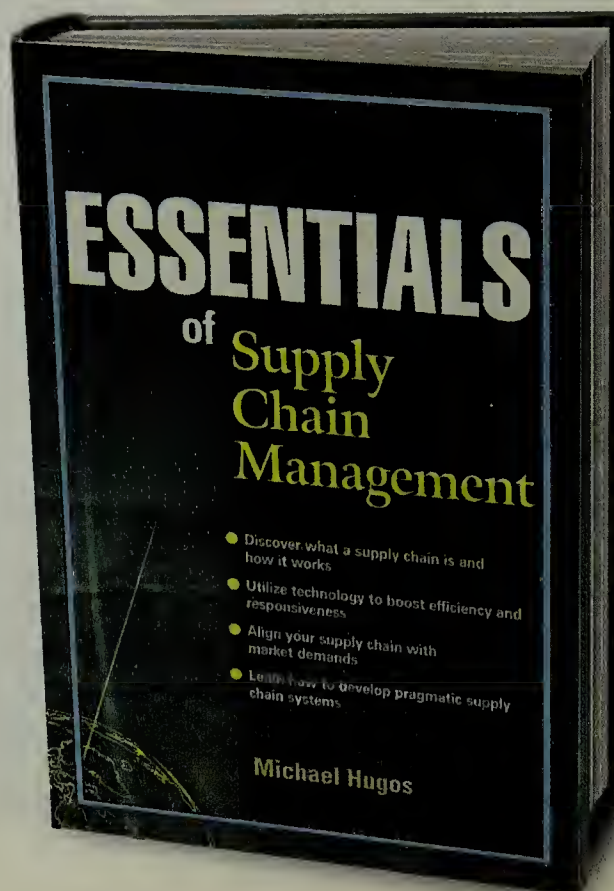
'80s; it's that it wasn't cool. I come down in favor of the practical approach.

**How does it work?** For companies with EDI [electronic data interchange], we reformat ASCII files to an EDI 850 or other file for EDI. We've all agreed on a certain ASCII file format. If they have to reformat to that, it's a trivial thing to do. People will call me primitive, but the use of ASCII flat files sent over the Internet is an amazing thing. When people wax enthusiastic about Web services or the Internet version of object-oriented XML, it's basically an ASCII flat file with angle brackets that tells you what that means. In a high-change, tight economy, I think you're always better off to go with point solutions and a guaranteed 12-month payoff.

**Can you give me an example from your own experience?** We have a wholly owned redistributor that stocks slower-moving items, but items that are necessary for national account contracts. That organization works on very thin margins. We've been very reluctant to add head count. But our business is growing steadily, so they're swamped. Members order from the warehouse, then the warehouse turns around and places the order with a supplier. We're now working on an initiative where everyone agrees on standard format for an invoice. Instead of a member calling us or faxing an order, they can export it in a standard ASCII flat file, encrypt and transport the ASCII file over the Internet.

Our order entry [system] simply imports that file and all order entry work, and data entry work is automated. Automate the "dog work" and let the people handle the exceptions. Why spend money on computers and artificial intelligence when I have real intelligence yearning to break free of the dog work that plagues them everyday.

People get into these exquisitely complex systems. Meanwhile, we're having this recovery that is not creating jobs. I believe [that] if computers monitor the daily in-and-out work and you can design a system where people are served by computers, you'll get something effective. But when you try to have computers do everything, it won't work. Computers are great at dog work, but I don't need computers to make decisions for me. ■



## BOOK EXCERPT ONLINE

Read an excerpt from Chapter 4 of *Essentials of Supply Chain Management* on our Web site.



QuickLink: 37065  
computerworld.com



# The business intelligence test that our competitors don't want you to take.

## 1. Want a Free Buyers Guide?

Finally, somebody explains business intelligence software in plain English. For your personal guide:

- ☐ Email a request to [guide@brio.com](mailto:guide@brio.com)
- ☐ Call us at 1-877-289-2746

## 2. Want a Free Test Drive?

Brio Software deploys faster because it is easier to use and manage. Without requiring extensive training. See for yourself with our Free Brio Performance Suite™ 8 Test Drive.

- ☐ Register at [www.brio.com/testdrive/cw](http://www.brio.com/testdrive/cw)
- ☐ Call us at 1-877-289-2746

## 3. Want a Guarantee?

With Brio, all you need is a data warehouse or database to generate reports or analyses, almost immediately. Results are guaranteed. Let us show you with our 2-day Guarantee.

- ☐ Call us today at 1-877-289-2746

**For more information on the NEW Brio Performance Suite™ 8 go to [www.brio.com](http://www.brio.com) or call 1-877-289-2746.**



**The Business Performance Software Company™**

©2003 Brio Software, Inc. All rights reserved. Brio Software and the Brio Software logo are registered trademarks of Brio Software, Inc. All other brand, product, or service names are the property of their respective holders. The guarantee program is subject to the terms and conditions set forth at <http://www.brio.com/guarantee/info>.



# NavSea's ROI Ship Comes In

E-procurement system cuts buying time by over 85%. **By Matt Hamblen**

**T**HE DOT-COM BUBBLE WAS already bursting when the Naval Sea Systems Command (NavSea) launched its SeaPort e-procurement system in April 2001. Since then, it's earned a high enough return on investment and regular positive feedback to be considered a success by more than 300 procurement managers, says Claire Grady, SeaPort program manager.

Key to the project's success was that NavSea was able to work with a single e-commerce procurement software vendor, Commerce One Inc., and follow specific guidelines agreed upon by higher-ups at the naval command.

The installation required a little more customization than was anticipated, but the system works reliably, Grady says. Yet she's somewhat skeptical about expanding the SeaPort system beyond its current use of buying professional services to include purchasing specialized goods for building ships and weapon systems for the U.S. Navy and Marines, which provide the lion's share of NavSea's current annual budget of \$19 billion.

The project grew out of pressure from the secretary of Defense to cut costs in 1998, a vastly different era for defense spending than today. NavSea was told to cut about 10% of its professional services procurement spending over five years, from 2001 to 2005. Professional services include program management, logistics support, engineering and financial management.

"SeaPort is on track to meet its savings [goal]," Grady says. The time to complete an acquisition, from start to finish, has dropped drastically —

from 270 days to between 30 and 42 days, or by over 85% — mainly because paperwork has been eliminated. NavSea has also been able to save with volume discounts by working with regular bidders, which the system ranks based upon quality of service and past performance, not just price, according to Grady and Kathleen Monahan, who recently retired as director of the surface systems division at NavSea.

NavSea picked Commerce One in Pleasanton, Calif., over nine other vendors partly because its off-the-shelf software required little customization. In two years of operation, one of the few difficulties that NavSea has faced is customizing Commerce One's software to track small, disadvantaged businesses that the government wants to support, Grady says.

Upfront software license and installation costs were \$500,000. Annual support costs are \$160,000, and annual Web hosting costs are \$240,000. NavSea has a five-year contract for hosting and support. Based on current and projected savings, the ROI goal that NavSea set with Commerce One has been met "very easily," says Grady.

Monahan and Grady say that 85% of purchasing managers consistently rate SeaPort an improvement over the old paper-based system.

"Commerce One bent over backward to make the portal screens the managers use very user-friendly," Monahan says.

Grady attributes the project's success to top management accepting the objectives early on, as well as to all of the main players getting involved in the ways that NavSea needed to improve procurement. This included rating

## CASE STUDY



**CLAIRE GRADY** says one of SeaPort's key benefits is its ability to rank suppliers based on quality of service and past performance, not just price.

## HOW IT WORKS

### SeaPort

The e-procurement system at NavSea replaced a paper-based system that didn't easily enable an evaluation of a contractor's performance. Here's a look at the process now.

**1** Program manager logs into SeaPort and defines requirements for the purchase of engineering, logistics, financial or program management services.

**2** Once the formal purchase requisition is approved, a contracting officer creates an electronic bidding event and invites a group of contractor teams to submit bids.

**3** When bids are received and the bidding event closes, NavSea evaluators use their browsers on SeaPort to evaluate proposals on multiple criteria, including the bidder's past performance and the price it's offering, as well as its technical capabilities. Evaluators are seeking a best-value bid.

**4** After evaluations are final, NavSea issues the purchase order electronically to the winning contractor or contractor group.

bidders by their performance. "It was a holistic look," she says.

The 10% savings, while a mandate in the case of NavSea, is realistic for any organization to achieve from e-procurement implementations, according to analyst Albert Pang at Framingham, Mass.-based research firm IDC. "Ten percent is consistent with what other companies have achieved when they start deploying e-procurement apps," Pang notes. "When you talk about an organization that processes tens of thousands of purchase orders a year or higher, certainly 10% would help tremendously."

## Streamlining Necessary

Pang said he has followed the SeaPort implementation and spoke to Navy officials several years ago about the need to consolidate the procurement processes the Navy had set up with thousands of suppliers. One administrative change to SeaPort allows for 21 primary supplier teams to bid on work, and each team works with multiple contractors and a recognized team leader.

"When I talked to the Navy in the late '90s, they had no idea at the top manager level who was buying the stuff, how much they were paying, how many suppliers there were," Pang recalls. "The U.S. Navy was dealing with so many operations around the country and world, and some people were able to buy stuff on their own. Maverick spending was rampant in many parts of government."

Pang acknowledges that the e-procurement software can organize only the processes that administrators put in place. "If people doing procurement aren't adhering to business rules, the idea will fall apart," he adds.

So, whether NavSea will be able to drastically control costs to make taxpayers happy is an open question. In fact, procurement of professional services amounts to only \$500 million annually, a fraction of NavSea's current budget. And Grady doesn't think buying parts or materials for ships online makes much sense because "a lot of what we buy is unique, and there aren't a lot of efficiencies in buying a unique item online." Still, NavSea will look to continuously improve current processes to try to derive greater benefit from its e-procurement system, she says. ▀

## MORE ON NAVSEA

NavSea officials hoped SeaPort would help streamline the procurement process when it went live in 2001.

**QuickLink a2970**  
www.computerworld.com



A woman, Rachel, is running towards the left, carrying a clipboard. In the background, a helicopter is landing on a grassy field. The scene is set in a rural, open area with a cloudy sky.

**Meet Rachel. Crisis Coordinator.**

**Communications Queen.**

**And a customer engaged to succeed against all odds.**

Waters continue to rise. Winds are relentless. Even a year ago a drop of emergency supplies under such conditions would have been nearly impossible. But with network capabilities that adapt to all media, employees like Rachel can coordinate multiple teams in scattered locations. And stay in constant contact as weather patterns quickly shift drop coordinates. At Nortel Networks, we call this "the engaged business model." And we make it happen by allowing businesses to engage their employees with ways to work more productively as teams. Eliminating boundaries by anticipating user needs. Delivering critical, time-sensitive information on whatever device they can access. Encrypted for security, info gets to where it needs to go and nowhere else. End of story: Rachel and her team save time and money as they race to help people in need. All delivered by our enterprise vision. One network. A world of choice.

[nortelnetworks.com/onenetwork](http://nortelnetworks.com/onenetwork)

**NORTEL  
NETWORKS™**

[nortelnetworks.com](http://nortelnetworks.com)





DATA STORED  
HERE

DATA STORED  
THERE

STORAGE OPTIMIZED  
EVERYWHERE



Tivoli software

# STORAGE MANAGEMENT PLAY

- 1] WIN WITH STORAGE MANAGEMENT: Information is growing exponentially. To efficiently run your business, you need powerful tools to understand and manage your storage environment.
- 2] WIN WITH TIVOLI: Tivoli Storage Resource Management Solutions are open, easy to deploy and self-optimizing. For improved utilization, easier administration and better ROI. Tivoli. Part of our software portfolio including DB2®, Lotus® and WebSphere®.
- 3] MAKE THE PLAY: To find a Tivoli Business Partner or to learn more, visit [ibm.com/tivoli/partners](http://ibm.com/tivoli/partners)

*@business is the game. Play to win.™*

IBM, DB2, Lotus, Tivoli, WebSphere, the e-business logo and e-business is the game. Play to win are registered trademarks or trademarks of International Business Machines Corporation in the United States and/or other countries. © 2003 IBM Corporation. All rights reserved.



# IT Customers Rule Innovation

**Users must demand technologies to improve business. By Mark Hall**

**C**omputerworld columnist David Moschella's new book, *Customer-Driven IT: How Users Are Shaping Technology Industry*

*Growth*, should send chills down the spines of executives inside the boardrooms of major IT vendors. He brilliantly argues that since the beginning of the computer industry, IT suppliers have been the main drivers behind technology innovation and, therefore, its growth and success. But that game, or "wave," as he calls it, is over.

Customers are now the big players in the innovation game, and the likes of Bill Gates, Scott McNealy and Carly Fiorina are mere onlookers.

Moschella rightly labels this a "huge cultural and business change" that's fraught with danger. That's because users are too comfortable letting IT suppliers point them in the right direction with cooler, faster and more efficient technology to improve existing

systems. But IT customers no longer need to improve IT for its own sake. Now the reason they need technology is to make their businesses better. And if IT users fumble the opportunity to exploit IT for that purpose, Moschella writes, "IT business will almost certainly stagnate."

And fumble they might. The author

points out that users can botch opportunities to exploit technology by refusing to see its value to business. He cites the music industry's opposition to peer-to-peer systems

such as Napster as the kind of backward customer thinking that can stifle IT innovation.

He also slams some customers' narrow focus on sifting every IT opportunity through the return on investment sieve. He writes that "customers have to forget formal ROI numbers and simply 'Rely On Instinct.'"

Customer-driven innovation is also at risk because IT vendors need to get with the new program and shift their focus to developing products that let users innovate. One other pitfall facing this new wave of technology innovation is that the historical supplier-driven waves are boosted by entrepreneurs motivated by wealth and status. But among users in markets such as health care and insurance, that motivation is sorely lacking and "will likely remain a serious IT industry market barrier," Moschella writes.

But not all is gloom and doom. Throughout the book, Moschella cites numerous examples that IT users can study to see how other customer innovation of IT has worked. And he also shows where it's likely to play out in the future. For example, in one two-column chart, he identifies 40 areas where customer business innovations are likely to inspire vendor product de-

velopment and not the other way around.

As is the case with most IT business books, readers will need to slog through this author's review of computer history. For those few unfamiliar with this terrain, Moschella's analysis of the prior waves of computing (such as mainframes and PCs) is concise and readable. But although it does help set up his thesis, it's not essential to getting to the vital part of this important book, which posits that IT's future is no longer centered amid engineers in Armonk or Redmond or even Silicon Valley. It rests with IT leaders in every IT data center in the world. ▀

## BOOK REVIEW

### Beware the Herd Effects

Given the prevalence of engineers and programmers, one would think that the IT industry would be among the most rational of businesses. But to me it's pretty clear that the single most important factor in the IT industry's health is the overall customer mood, often referred to as "business confidence." Indeed, sometimes I think that much of the history of computing can be summed up as follows: Computers are so confusing and complicated that customers operate in a constant (if not always conscious) state of wariness and even fear. In this climate, it's only natural that IT buyers often seek safety in numbers. The result is powerful "herd effects," which manifest themselves in two main ways: unusually high supplier concentration and recurring boom and bust cycles.

— Excerpt from *Customer-Driven IT: How Users Are Shaping Technology Industry Growth*, by David Moschella (Harvard Business School Press, 2003)

**Tivoli** software

## WIN WITH TIVOLI AND IBM BUSINESS PARTNERS.

Are you equipped with the best storage solutions for your business? Ask one of these IBM Business Partners. They have Tivoli Storage Resource Management Solutions and the expertise to go with them. For more information on SRM or to find more Business Partners to help you optimize your business, visit [ibm.com/tivoli/partners](http://ibm.com/tivoli/partners)

ADVANCED SYSTEMS GROUP

ARROW ENTERPRISE COMPUTING

ASPEN CONSULTING, INC.

AVNET COMPUTER MARKETING

BERBEE INFORMATION NETWORKS

CHAMPION SOLUTIONS GROUP

COMPSAT TECHNOLOGY, INC.

COMPUTER NETWORK TECHNOLOGY CORP.

DENVER SOLUTIONS GROUP, INC.

EC SOLUTIONS

INGRAM MICRO, INC.

KEYLINK SYSTEMS

MIDLAND SYSTEMS, INC.

SALEM GROUP, INC.

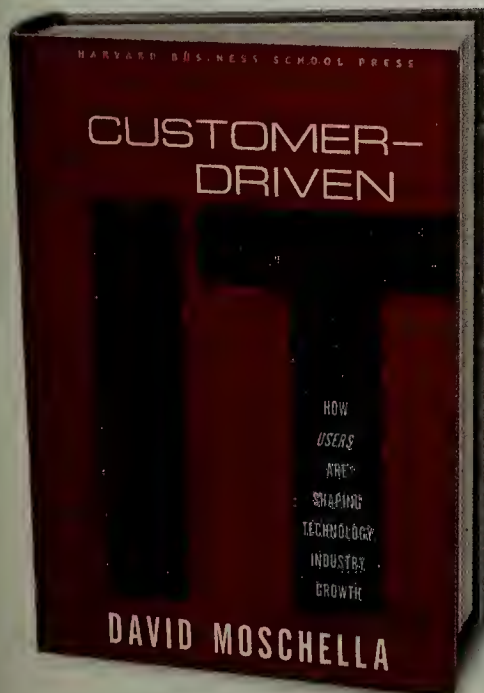
SIRIUS COMPUTER SOLUTIONS, INC.

SOFTWARE INFORMATION SYSTEMS

SOLUTION TECHNOLOGY, INC.

**IBM**

@business is the game. Play to win.™





## BRIEFS

## TRW Establishes Offshore IT Center

Satyam Computer Services Ltd., one of India's largest IT outsourcing companies, announced that it has set up a dedicated offshore solutions center for TRW Automotive Inc., a Livonia, Mich.-based automotive parts manufacturer. Located in Chennai, India, the new center will provide TRW with a broad range of IT and business services, including process consulting, business process re-engineering and application management.

## Training Portal Set To Save Ford \$17M

Ford Motor Co. today is launching the Ford Learning Network, a massive Web-based portal that integrates all training management, online testing and learning resources in a single place for use by the automaker's 300,000 employees worldwide. The network's library includes more than 400,000 titles, including 1,500 online courses, 1,900 e-books, an array of Ford internal online Web sites and hundreds of journals and periodicals. Today's launch is the culmination of a three-year project that will result in savings of \$17 million, according to Ford.

## Perot Gets Medical IT Outsourcing Deal

Plano, Texas-based Perot Systems Corp. will provide all IT management services, including application, program and project management, as well as systems implementation and infrastructure services, to Tufts-New England Medical Center Inc. under an agreement announced last week.

The deal calls for Perot to help the medical center split from its former corporate partner, Lifespan, a Rhode Island-based health system. Lifespan previously provided all IT services to the Boston-based medical center.

MATTHEW KRIEGER ■ PEER TO PEERS

## Ten Ways to Increase Your IT Value

**I**NFORMATION TECHNOLOGY departments are under more pressure than ever to prove their value in today's climate of continued economic constraints and depressed IT spending. In these times, we must be diligent about not losing sight of the fundamentals. Based on my nine years of experience in IT, here are 10 ways to increase your value and that of IT at your company:

**1. Execution is everything; just get it done.** True, it's a cliché, but more than ever, the business is in need of an IT department that can deliver. Don't get embroiled in endless analysis; take reasonable risks and just do it. You'll show the business that your department is competitive and action-oriented.

**2. Deliver solutions, not ideologies.** Drop the religious debates over Unix vs. Linux vs. Windows. Forget about historical allegiances to specific platforms, and resist the habit of calling yourselves the "Windows group" or the "Unix team." Just deliver the most appropriate solutions that are consistent with your enterprise's overall IT architecture at the most competitive cost.

**3. Deliver a consistent message.** Tactics change, but your strategy and vision should be good for the long haul. If you've got a solid message that's consistent with the overall corporate strategy and vision, repeat it enough and people will follow. But also remain agile and prepared to change, because at some point the technology and business will change.

**4. Personally engage the business.** Everyone knows that successful IT departments are closely aligned with the



MATTHEW KRIEGER is associate director of global network services at The Reader's Digest Association Inc. and plays a leadership role in global IT. He is currently engaged in several infrastructure and architecture initiatives and is a member of the committee driving global standards for technical architecture and application development.

business, but for IT employees who work behind the scenes on networking and infrastructure issues, it may be difficult to see how your work contributes to the overall business.

Find your own hook into the business. Pick a project or a department, build the relationships, and show how you and your department can contribute to their goals.

**5. Learn the "stack."** In our IT department, we use the term *stack* to describe all the components of a particular system, from the physical infrastructure to the business application and content, and everything in between. The best IT people understand the application stack from bottom to top. Understanding applications and technologies this way makes you more valuable, engages you with the business and gives you a competitive advantage over those who understand just their piece.

For example, there's traditionally a gap between the developers who write an application and the network infrastructure people who provide the transport. Those who can bridge the gap by understanding how the application and the network interact offer extra value.

**6. Consider less-conventional technology alternatives.** Competitive IT departments recognize the value in low-cost, functional solutions. For example, a year and a half ago it was almost inconceivable to consider running a business with a productivity suite other than Microsoft Office. Today there are several lower cost or free alternatives, such as open source or inexpensive commercial suites, that are rapidly becoming functional replacements. The same is true for other product segments as well, so consider these before your next major upgrade.

**7. It's a buyer's market, so take advantage of it.** Vendors are more willing to negotiate than ever. Simply needing to survive, they're hot to compete. Take advantage by playing the field for commodity buys and driving down prices.

**8. Think enterprisewide.** Target your IT initiatives across the entire enterprise when possible. Cost pressures make it a necessity, because management will resist site-specific implementations.

**9. Respect technology and the business it enables.** It has become popular in the past several years to proclaim, "It's not the technology that's important; it's the business." While generally true, this phrase is overused. Let's face it — good technology can help to drive down the costs of doing business and enable new business, and that's a good thing. Maintain a healthy balance in your business/technology focus.

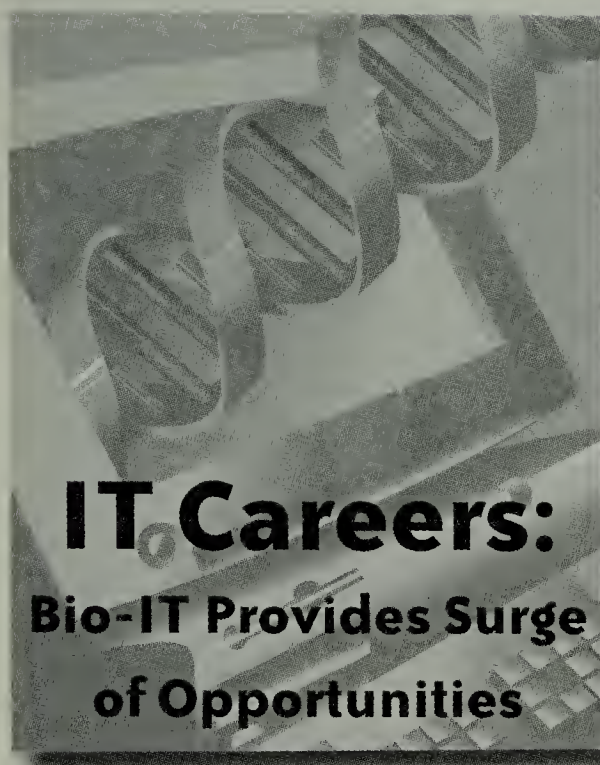
**10. Develop a working knowledge of Linux.** Windows isn't the only game in town anymore. Linux is becoming increasingly common, so it's important to understand the economic and technical issues around it. You'll be better prepared to answer your customers' questions as a result. ▀

## WANT OUR OPINION?

For more columns and links to our archives, go to: [www.computerworld.com/opinions](http://www.computerworld.com/opinions)



## Advertising Supplement



## IT Careers: Bio-IT Provides Surge of Opportunities

One way to trace career opportunity is to trace dollars allocated for research and new product development. The search in 2003 through 2006 points to bio- and chem-informatics. With funding from the National Science Foundation, the Department of Homeland Security and the

Department of Defense, both areas are looking at annual growth of up to 18% per year, according to IDC research. Theo Chisholm, spokeswoman for IBM Health Sciences, said once mapping of the human genome opened the gate, the need for systems to mine and process data exploded. IBM estimates the market to exceed \$30 billion per year in the U.S. by 2006.

Take note: the growth isn't just a U.S. phenomenon. Bio-IT spending, according to IDC, will more than double in the next three years in Australia and New Zealand, where more than 300 biotech firms are employing over 6,500 people.

The mission for informatics is two-fold. First, there is intense pressure to identify new targets in pharmaceuticals and health treatment quickly and at a lower cost. Just as important is eliminating targets that won't prove out as quickly as possible. In the defense and security category, there's pressure on everything from sourcing a new smallpox vaccine to addressing probable bio-toxins that could be used as weapons. On the chem-informatics front, chemistry and IT are married up in developing new detection systems for use in public buildings and areas, as well as in military action.

What's rare in the industry are people qualified for the work, knowledgeable in the sciences – biology and chemistry – as well as in applied mathematics

and information technology. Companies are looking for people who have built, used and applied IT tools to data, from DNA to outcomes of clinical testing. The Whitehead Institute Center for Genome Research estimates that about half as many people are prepared for the field as are needed long-term.

For IT professionals interested in the bio-IT field, there are some stepping stones to landing the jobs. The key languages used are C++, Java, Fortran and Perl. Many times, the toughest experience to get is in the biological sciences – where IT is applied for the purpose of biological findings, not just for development of new applications. Dual degrees, for that reason, are important. Numerous master's degree programs have opened in bioinformatics, and the Center for Bioinformatics and Computational Biology offers a mentoring program. On-line courses also can supplement experience. Certifications include the Certified Bioinformatics Specialist and the Certified Bioinformatics Master.

### IT Careers

For information on recruitment advertising, please contact: Nancy J. Percival, Director, Recruitment Advertising, at 800-762-2977  
500 Old Connecticut Path  
Framingham, MA 01701  
Produced by Carole R. Hedden

#### COMPUTER PROFESSIONALS

Opportunities for:

- WEB ARCHITECTS/DEVELOPERS
- SYSTEMS ANALYSTS
- WEB GRAPHIC DESIGNERS
- NETWORK ENGINEERS
- PROGRAMMER/ANALYSTS
- SOFTWARE ENGINEERS

#### SKILLS:

- COLD FUSION • SPECTRA
- ORACLE • VISUAL BASIC
- VISUAL C++ • SIEBEL • ASP
- COM, DCOM • JSP • HTML
- JAVA, JAVA BEAN • EJB JAVA
- SERVLETS • WEBSPIRE
- IBM MQ SERIES • XML, UML
- MTS • CLARIFY • PERL
- OBJECTPERL • SPYPERL
- SMALLTALK • PL/SQL
- VISUAL AGE • COBOL, SPL, UNIX

Visit our website @  
[www.computerhorizons.com](http://www.computerhorizons.com)

Attractive salaries and benefits. Please forward your resume to: H.R. Mgr., Computer Horizons Corp., 49 Old Bloomfield Avenue, Mountain Lakes, New Jersey 07046-1495. Call 973-299-4000. E-mail: [jobs@computerhorizons.com](mailto:jobs@computerhorizons.com). An Equal Opportunity Employer M/F.

A Chicago area computer firm seeks Programmer Analyst. Duties: Analyze the data processing requirements and user needs to determine the computer software which will best serve those needs; Design a computer system, using Oracle, which processes the data in the most timely and inexpensive manner; Implement that design by overseeing the installation of the necessary software and its customization to the client's unique requirements; Interact with the management team explaining each phase of the development process, responding to their questions, comments and criticism, and modifying the system to accommodate client's concerns. 40 hrs/wk, 9am-6pm, \$45,000/yr. B.S. in C.S. or related field. Experience with Oracle programming. Applicant must show proof of legal authority to work in the U.S. Send resume to: IL Dept. of Employment Security, 401 S. State St. - 7 North, Chicago, IL 60605, Attn: Leonard Boksa. Ref# V-IL34151 - B. An employer paid ad. No Calls-Send 2 copies of both resume & cover letter.

Prog/Analysts to analyze, design software business appls using SAP R/3, Java, XML, HTML, VB, COM, Active X, Oracle, SQL server under Windows/UNIX OS; perform monitoring, quality control, coding/testing of applications; generate batch reports, debug, tune for optimal performance. Require: BS or foreign equiv. in CS/Engg (any branch) & 6 months exp. in IT field. Travel involved. High salaries. Respond to: HR, Smartsoft International, Inc., 7900 Steubenville Pike Suite 21, Imperial, PA 15126

SW Eng'ers: Rsrch, dsgn, dev'lop & maintain complex sw sys w/ Websphere, PeopleSoft HRMS/EPM on Unix/AIX; Install & configure PeopleSoft process Server & Z/OS w/ DB2 sys. level in MVS/CICS & Corba. 8-5, 40h/w, BS dgr in Electr'l Eng'g or related field, 2 yr wk exp. involv'g Websphere, PeopleSoft HRMS/EPM & MVS/CICS. Resume to Mondraty at [ITsoftrecruite@yahoo.com](mailto:ITsoftrecruite@yahoo.com) or fax: 305-704-1238.

## OUR PEOPLE MAKE THE Difference

**WAL★MART** Stores, Inc.

### We're Looking for the Future Leaders of Tomorrow

Wal-Mart Stores, Inc. has been recognized by *Fortune* Magazine as one of the most admired companies in the world. As our company continues to expand, so does the opportunity for first-class, talented people to guide the future of one of the most successful and innovative growth companies in the world.

Put your career on a fast climb and help us continue to set the industry standard in information technology.

- UNIX - C, C++, Administration, Engineering, Informix DBAs
- NT Workstation - VB, VC++, Java, ASP, XML
- IBM Mainframe - COBOL, CICS, DB2 and IMS DBAs
- Networking - Ethernet, VSAT, Frame Relay, ATM
- Telecommunications

Ready to do it all? Candidates interested in joining our team should forward a resume to:

Wal-Mart Information Systems Division  
Attn: Recruiting Department  
805 Moberly Lane M41  
Bentonville, AR 72716-0560  
Fax: (479) 277-4227  
E-mail: [ISDADS@wal-mart.com](mailto:ISDADS@wal-mart.com)

For more information, call toll-free:  
1-888-JOBS-ISD or visit our  
Web site at:  
[www.walmartstores.com](http://www.walmartstores.com)



Wal-Mart is An Equal Opportunity Employer. M/F/D/V  
©2000 Wal-Mart Stores, Inc.



# SENIOR APPLICATIONS SYSTEMS ANALYST/ PROGRAMMER

Formulate and define system scope and objectives. Devise or modify procedures to solve complex problems considering computer equipment capacity and limitations, operating time, and form of desired results. Prepare detailed specifications from which programs will be written. Design, code, test, debug, and document computer software programs and interface for Lotus Notes Programming using expertise in Java, Lotus Domino software installation on Windows Sametime 3.0 Installation, Sametime Integration. Develop complex databases with Lotus Notes scripting and integration of Domino into web applications. Requirements: Bachelor's degree or equivalent in Computers or related field and four years of experience as a software engineer, programmer or programmer analyst. Knowledge of Lotus Notes, Java, Lotus Domino, Sametime 3.0, Sametime Integration. Salary: \$52,000/yr. Apply: Denise A. Del Cotto, Integral Strategies, Inc., 2300 Sainte Claire Plaza, 1121 Boyce Rd., Pittsburgh, PA 15241.

# SYSTEMS ANALYST II & ANALYST, LEAD WEB SYSTEMS IT

ADT Security Services, Inc., has immediate openings in its Aurora, Colorado and Boca Raton, Florida offices for experienced Systems Analysts.

Must possess at least a bachelor's in Computer Science or a related field and relevant work experience with Oracle Applications, Oracle Databases, Oracle Tools and PL/SQL for Aurora opportunity or relevant supervisory/lead experience with small teams and web development experience, including Cold Fusion, J2EE technologies and Electronic Data Interchange (EDI) for Boca Raton opportunity.

Resume and/or cover letter must reflect each requirement above and specify reference code SAHM /ALPS or it will be rejected.

Forward resume to Theresa Maia, ADT, One Town Center Road, Boca Raton, FL 33486-1010.

**GIS APPLICATION PROGRAMMER** wanted by civil engineering consulting co., in Houston, TX. Must have Comp. Sc. or Comp. Engineering degree plus exp. Respond by resume only to: Mr. Brian Tao, V.P., C/R-#10, Sunland Engineering Co., 9575 Katy Fwy, Ste#200, Houston, TX 77024.

Compsoft Technology Solutions Group, Inc. seeks experienced Prog/Sys Analysts, DBAs, Sys Admins and S/W Engineers to develop, design S/W systems using some of the foll: C, C++, VB, PL/SQL, Dev 2000, Cobol, Java, HTML, JSP, Jscript, MS Access, MS SQL, Oracle, Sybase, wireless technologies, Data warehousing, web technologies, packages/applications such as SAP, Oracle Financials, BAAN, Windows/UNIX admin, etc. Require BS/MS or foreign equiv and relevant exp. High salary. F/T. Travel involved. Resumes to HR, 11 N Roselle Road, Schaumburg, IL 60194

Seeking qualified applicants for the following positions in Orlando, FL: **Senior Business Application Analyst**. Formulate/define systems' scope and objectives based on user/customer needs and a good understanding of applicable business systems and industry requirements. Requirements: Bachelor's degree\* in computer science, business, math, engineering or related field plus 5 years of experience in analyzing business systems and developing technical automated solutions. Experience with MS Project and either C++, Java, JSP or object-oriented programming also required. \*Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Sibi George, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

# SOFTWARE ENGINEER, SYSTEMS INTEGRATION

Designs and modifies computer programs and interface components to facilitate the transfer of data, recorded by electrical/mechanical equipment, to central computer server, in a format that is distributable to and readable by end users, throughout private wide area network. Must have a B.S. in Electrical Engineering or Computer Science and two years experience in the job offered. 40 - 50 hours per week. EOE, Drug Free Workplace. Send resume to: 21st Century Oncology, Attn: Joyce White, 2234 Colonial Blvd., Ft. Myers, FL 33907 or fax (239) 931-7381

S/W Engineers to analyze, design, develop/implement web and business apps using OO methodologies, VB, Java, JDK, COM/DCOM, Servlets, XML, HTML, JDBC, Oracle, MS Access, SQL Server etc on Windows/UNIX OS; configure client server apps, document program specs, create appln prototype; provide input on project time/cost estimates and end user training. Require: M.S. or foreign equiv. CS/Engg. (any branch) & 1 yr exp. in IT field. Travel involved. High salaries. Respond to: HR, Smartsoft International, Inc., 7900 Steubenville Pike Suite 21, Imperial, PA 15126

**Programmer Analysts** - Experience in all phases of Siebel implementation in an Oracle environment using e-Scripts, VB Script, Actuate Developer Workbench and work flow. Must have extensive experience in Data Mapping, Siebel configuration, integrating external applications to Siebel using various tools like Enterprise Integration Manager and Business Integration Manager in addition to UAT and end-user training. 2 Years experience on the job with a BS in Engg/Science/Math or equivalent. Salary: \$70K. To: Shiva Systems 705 Mermaid Dr 308 Deerfield Beach FL 33441

**Chief Computer Programmer** needed in Chattanooga, TN, to plan, schedule, and coordinate the designing and writing of program specifications primarily on an HP/3000. Requires 5 years of programming experience. Send resumes to Laura Manis c/o BC/BS of TN, 801 Pine St., Chattanooga, TN 37402. Refer to job code: BDBC-CCP.

Nextek Systems has immediate, full-time opportunities for Consultants, Software Engineers, SAP Consultants, Programmer Analysts, System Analysts, QA Analysts, Database Administrators, Engineering Programmers and Programmers with any of the following skills: Borland, SQL, SQL Server, DB2, CICS, COBOL, Siebel, BPCS, Oracle, Peoplesoft, Sybase, SAP/ABAP, Java, J2EE, CORBA. Bachelor's or Master's degree or foreign edu. equiv. of same and/or exp. required depending on position. For some positions, we also accept the degree equivalent in edu and exp. Travel and/or relocation required. Send confidential resume and salary requirements to: Nextek Systems, Inc., HR Manager 18W 140 Butterfield Rd. 15th Fl. Oakbrook Terrace, IL 60148.

As the world's largest Options Exchange, the Chicago Board Options Exchange (CBOE), we rely on the latest tools and technology to maintain market leadership in the options industry. Our Systems department plays an integral role in ensuring that our growth continues. We currently have the following opportunities:

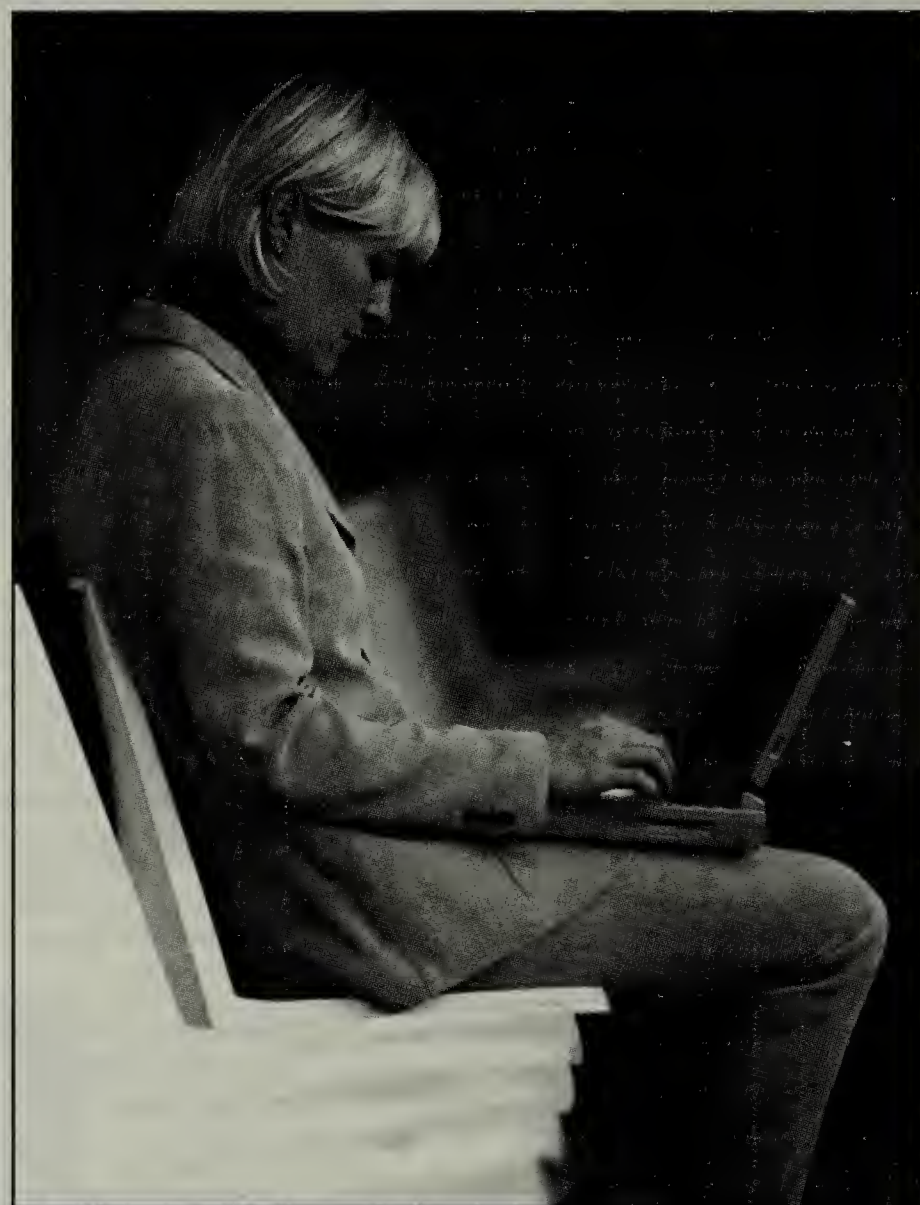
- Engineer
- Sr. Programmer Analyst
- Programmer Analyst

As part of the CBOE, you will enjoy a competitive salary and excellent benefits. For further consideration, please mail your resume to CBOE, Attn: Human Resources, Dept. MGCW, 400 S. LaSalle St., Chicago, IL 60605. For further information regarding these opportunities as well as other opportunities, please visit our website at <http://www.cboe.com>. CBOE is an equal opportunity employer M/F/D/V.

**Software Developer** for text analysis and development of programs in many languages esp. Korean + development of categorization extraction and email alerts software. Reqs: Masters + 0 experience or Bachelors + 2 years experience. Fluency in Korean. Send resume to: Teragram, 236 Huntington Ave. #302, Boston, MA 02115, Attn: Yves Schabes. NO CALLS.

**Web Developer:** Design, Develop, test, maintain and provide web based automated competency based workforce assessment system for HRMO. Req. Bachelor's Degree or equivalent in CS plus 11 months experience in job offered or in programming. proficient in Dreamweaver MX, Authorware, Fireworks MX, Flash MX, JavaScript, Illustrator, ASP, CSS, and Dhtml. 40hr/wk, 9-5. Contact Business Computer Applications, Inc. at 2180 Satellite Blvd., Suite 325, Duluth, GA 30097.

**Sr. Engineers Needed.** Seeking cand. poss. MS or equiv. &/or rel. work exp. 1 yr. of the req. rel. exp. must incl. working w/ microprocessor/microcontroller based software/hardware, VC++ and COM/DCOM. Mail res. & ref. to BTMD, Inc., 3 Leonard Rd., Mendon MA 01756, ATTN: HR



**SURE  
NETWORK WORLD,  
COMPUTERWORLD,  
AND INFO WORLD  
HELP YOU DO  
A BETTER JOB.**

**NOW LET US HELP  
YOU GET ONE.**

**CALL:  
1-800-762-2977**

**it|careers.com**



Software Engineers & Programmers. Design, develop, test and implement specialized software apps. in multi-systems envt. in (i) Oracle 11i Apps. (Property Management, Manufacturing, Financial & HR), Noetix Servers, NQS Admin. and related technologies; (ii) LotusNotes, Domino, UML, J2EE, Microsoft Web Technologies and RDBMS. To apply or for complete job info - HR, Apps Associates, LLC, 9 East Lookerman Street, Suite 1B, Dover, DE 19901. US Workers Only. EOE.

Sr. Programmer/Analyst to perform full life cycle development of client/server applications, gather project information, design, create database, code & test applications, provide production support, run reports, trouble shoot, mentor & assist Jr. Programmer/Analysts. Work with ASP, ASP.Net, VB, Cold Fusion, SQL Server 2000, Oracle, XML, J2EE and Crystal Reports. Required B.S.C.S and 2 years related experience. M-F/40hrs/wk. Freq. reloc. within U.S. may be necessary. Send resume to J. Brigham, HR Ref. A32, TEK Systems, Inc., 7301 Parkway Drive, Hanover, MD 21076. EOE.

IT SPECIALIST to install, configure, and support network systems; develop, maintain and administer automated computer systems including PowerFacts, EDCONN, NSLDS, ELM, and mainframe; coordinate the automation, updating, and maintenance of current and future technological processes; responsible for the coordination and production of regular financial reports in an accurate and timely manner. Require: Bachelor's degree in Computer Science/Information Systems. Competitive salary and benefits. Mail resume to: Director, Human Resources, Alabama A&M University, P.O. Box 305, Normal, AL 35762.

Instructor (Computers). Teach courses including demonstrations on LAN/WAN & vendor spec. courses in Cisco & Microsoft. Manage Cisco lab including 12 routers, 6 switches, access server and 12 workstations & provide counseling. Req: BS in Comp. Sci., Comp. Eng., or Elect. Eng. + Certificate in Cisco & Microsoft. 40 hrs/wk. Job/Interview Site: Woodland Hills, CA. Send resume to Oxford Institute of Technology, resume@oitcareer.com.

Software Engineer - Rocklin, CA. Require experience in design and development of applications using Oracle, Java, XML, Oracle Financials, Windows NT and UNIX. Relocation within USA Possible. Attractive compensation package. Send resume to Steve Gabelich, Calwest Consulting, LLC., 1620, Iroquois Rd., Rocklin, CA 95765.

Seeking qualified applicants for the following positions in Memphis, TN: **International Systems Advisor**. Define, plan, organize and provide project leadership for the development and implementation of worldwide regulatory clearance systems. Requirements: Bachelor's degree in computer science, math, engineering, business or related field plus 7 years of experience in defining system requirements and/or project leadership in the development of user systems. Experience with customs clearance systems, data extraction using SQL and RDBMS also required. \*Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Greg Dixon, Federal Express Corporation, 3650 Hacks Cross Road, Memphis, TN 38125. EOE M/F/D/V.

Network Components LLC has several openings for Web Services engineers. Must have knowledge of back office systems such as ADP/SIS, Beta, Phase 3 and be able to develop applications and administer WAS, WLS, UDB and Oracle on Linux and Solaris. Must have knowledge of MOMs with JMS implementation. Should be comfortable with Ant and CVS for code repository and release management, and with Visual Age IDE and WAS Studio for development. Requires: B.S. with one year experience in enterprise wide systems development using J2EE platform and Brokerage Business Objects. Send resumes to: HR, Network Components, 200 West 72nd Street, Suite 24, New York, NY 10023 or by fax 212.362.3822

Software Engineers & Programmers (Atlanta, GA & Jacksonville, FL): Analyze, design and develop real time apps. to monitor Cable Network outages in GIS and COM+ technologies including MapInfo, MapXtreme, GViewer, MS Dev. Tools, web technologies, SQL Server and related RDBMS in Win 2000/Citrix. To apply or for complete job description, respond to Think Resources, Inc., Attn: GIS Recruiting, 280 Technology Parkway, Norcross, GA 30092. EOE.

Director of S/ware Applics & Prgrmg-LA. Manage & coord comp. prgrmg & s/ware applic activities. Bach in comp. sci., CIS or reltd comp. fld +4 yr exp in job offd or as s/ware dvlpmt mgr. Must be proficient in Code Warrior on MacOS, MS Visual C++, x86 Assembly, Power PC Assembly, Nintendo GameCube OS & Python, & familiar w/3-D graphics & human interface dsgn. Send resume & ltr to Denise Dunlap, Vivendi Universal Games, 6080 Center Dr., Los Angeles, CA 90045.

Seeking qualified applicants for the following positions in Colorado Springs, CO: **Programmer Analyst**. Define, initiate, develop and deploy company website. Requirements: Bachelor's degree in computer science, MIS or related field plus 5 years of progressive experience in software development. Experience with SQL Server, Webtrends Log Analyzer and O'Reilly Website Professional also required. \*Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Scott Davis, FedEx Freight Systems, 350 Spectrum Loop, Colorado Springs, CO 80921. EOE M/F/D/V.

Kanbay is a premier global systems integrator that provides high-quality, high-value solutions to the insurance, banking, credit card, consumer lending and securities industries. We provide a complete life-cycle of services including program management, business analysis, technology planning, architecture, application development, maintenance and support. Our specialized services include business intelligence, package selection, customization, implementation and testing.

The following opportunities are based at our corporate headquarters in Chicago and locations nationwide.

We are seeking candidates with technical skills in: JAVA, J2EE, OOAD, WebSphere, XML, COBOL, CICS, DB2, JCL, and VisionPlus expertise in an MVS environment.

- Project Managers
- Technical Architects
- Project Leads
- Sr. Programmer/Analysts
- Associate Consultant

For consideration, forward response to: Kanbay, Inc., 6400 Schafer Ct., Suite 100, Rosemont, IL 60018. Fax: 847-318-0784. Email: rstewart@kanbay.com. Please reference code CW0303 in all correspondence. Kanbay is an Affirmative Action Employer/EOE organization.

**Kanbay**

www.kanbay.com



Sr. Systems Analyst w/ exp in Oracle, Developer 2000, PL/SQL, SQL, SQL Loader, SQL Plus, Java, JDBC, HTML, Oracle application Server, Designer 2000 and Unix Korn Shell Scripts on Win NT/2000. Send resumes to Biwer & Associates, Inc., 1050 Walnut Ridge Drive, Hartland, WI 53029. Attn: HR Dept.

PROGRAM ANALYST: Gather info. on data processing reqs, prep. spec. for installation of web compliant applications. Obtain info. on limitations and capabilities of their existing sys. & res. req. for the project. Help Sr. Program to determine hardware configuration. Monitor application are in conformity w/ sys. arch. Req: BS in Comp. Science, Comp. Eng., or Elect. Eng. - 40hrs/wk. Job/Interview site: Manhattan Beach, CA. Send resume to Rich Homes, Inc., 2905 A Sepuveda #151, Manhattan Beach, CA, 90266.

Systems Analyst to Write Stored Procedures (using MS Visual Studio.net), Views, User Defined Functions & Select Statements using SQL Server 2000. Test & execute Stored Procedures using SQL Query Analyzer. Use Enterprise Mgr. & MS Mgmt. Console to create, save, & open MMC consoles to manage hardware, software, & network components of Windows system. Save all Procedures, Views, Function Scripts using Visual Source Safe. Utilize Test Director for testing. Design Rpts using Seagate Crystal Rpts 8.5 & Cognos. Provide tech. support. BS in Comp. Sci. + 3 yrs. Exp. in job duties. Apply: Acres Gaming, Inc., 7115 Amigo, Suite 150, Las Vegas, NV 89119 with proof of perm. work authorization.



For over 20 years, **Syntel** employees across North America, Europe, and Asia have helped build advanced information technology systems for leading Fortune 500 companies and government organizations to improve their efficiency and competitiveness. Today, Syntel professionals are building rewarding careers by providing solutions in e-business, CRM, Web Design and Data Warehousing.

Come discover why **Forbes** magazine placed Syntel second on its list of "The 200 Best Small Companies in America" and **Business Week** ranked us #11 on its list of Hot Growth Companies.

Due to our rapid growth, we have immediate, full-time opportunities for both entry-level and experienced Software Engineers, Consultants, Programmers, Programmer/Analysts, Project Leaders, Project Managers, Supervisors, Database Administrators, Computer Personnel Managers and Computer Operations/Account Managers/Account Executives with any of the following skills:

### Mainframe

- IMS DB/DC or DB2, MVS/ESA, COBOL, CICS
- Focus, IDMS or SAS

### DBA

- ORACLE or SYBASE
- DB2

### Client-Server/WEB

- Siebel
- Websphere
- Com/DCom
- Web Architects
- Datawarehousing
- Informix, C or UNIX
- Oracle Developer or Designer 2000
- JAVA, HTML, Active X
- Web Commerce
- SAP/R3, ABAP/4 or FICO or MM & SD
- Oracle Applications & Tools
- Lotus Notes Developer
- UNIX System Administrator
- UNIX, C, C++, Visual C++, CORBA, OOD or OOPS
- WinNT
- Sybase, Access or SQL server
- PeopleSoft
- Visual Basic
- PowerBuilder
- IEF

### Account Executives, Account Managers and Business Development/Account Specialist

positions available.

Some positions require a Bachelor's degree, others a Master's degree. We also accept the equivalent of the degree in education and experience.

With Syntel (NASDAQ: SYNT), you'll enjoy excellent compensation, full benefits, employee stock purchase plan and more. Please forward your resume and salary requirements to: **Syntel, Inc., Attn: Recruiting Manager-LD03, 525 E. Big Beaver, Suite 300, Troy, MI 48063. Phone: 248-619-2800; Fax: 248-619-2888. Equal Opportunity Employer.**

**SYNTEL**  
www.syntelinc.com



**Banking**

MBNA America Bank, N.A., the world's largest independent credit card issuer, is accepting applications for several Database Analyst positions.

Duties: Responsible for preparing data for analysis, advising management regarding data quality, and suggesting appropriate analytical techniques using enhanced standard methodologies. The incumbent will use relational databases such as ORACLE or DB2 and data manipulation/analytical tools such as SAS, FOCUS, or SQL to extract leads from departmental databases and will use suppression files to suppress and/or exclude accounts appropriately. Additional duties include summarizing, and communicating analysis results to Business Partners; fielding questions and suggesting further analyses; and interpreting implications of findings in context of other analyses.

Requirements: Bachelor's degree in a quantitative discipline such as Statistics, Economics, or a related field and two years experience with data management, or in an analytical and/or quantitative role. Experience with SAS or FOCUS strongly preferred. A master's degree in Statistics, Economics, Operations Research, or related discipline can be substituted for experience requirement.

Please forward your resume and a cover letter referencing code number NA033080 to S. D. Alexander, MBNA America Bank, N.A., 1100 North King Street, Wilmington, DE 19884-0242. We're proud to be an Equal Opportunity/voluntary Affirmative Action Employer.

A position is available for an Advisory Consultant in Atlanta, Georgia with an e-business technology company. The company provides solutions that enable corporations and software providers to leverage emerging technologies to more effectively compete in the global market.

The Advisory Consultant will be primarily responsible for designing complex customer solutions, including architecture recommendations and implementation design for custom software applications at customer sites.

Candidates for this position should possess a Master's degree in a computer field and at least 2 years' experience with client and server-side Java, C, C++, Power Builder, and Visual Basic; two years' database development experience with Sybase and Oracle; and 1 year's experience with middleware development and training delivery. Ability to travel 75% of time.

Apply by mail to:

Natalie Gow  
Jacada Inc.  
400 Perimeter Center Terrace  
Suite 100  
Atlanta, Georgia 303046

**Computer Programmer needed.** Seeking qual. cand. possessing BS or equiv. and/or relevant work exp. Duties include upgrade, customize, integrate, and implement Medplexus Software into Medical Processes. Must be willing to travel and relocate. MD Professional Corp., 1860 Mowry Ave, #400, Fremont, CA 94538, ATTN: HR.

**DATABASE ADMINISTRATOR**

Database Administrator to do logical and physical design of Oracle database; Code test and implement Oracle scripts applying knowledge of Database Management Systems; Calculate optimum values for Oracle database parameters; performance tune Oracle databases; Model Oracle database security; manage backup and recovery of Oracle databases; make changes to Oracle database applications using knowledge of Oracle 8.0, C, PL/SQL, Visual Basic, Perl and VMS. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a database administrator, expertise in Oracle database administration which includes logical design, physical design, performance tuning, backup and recovery, coding of scripts, knowledge of Oracle 8.0, C, PL/SQL, Visual Basic, Perl and VMS. Salary: \$66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and relocation. Apply: Manager, Butler County CareerLink, Pullman Commerce Center, 112 Hollywood Drive, Suite 101, Butler, PA 16001, Job No. WEB313167.

**Sr System Specialist (Boston, MA)**

- Lead design, development, maintenance, & documentation of Web portal for Small Business Services line of business. Responsibilities incl: lead analysis, sys design, & sys architecture, program in Java, JavaScript, C/C++, & Oracle; identify areas of risk & present mitigation plans; demonstrate expert understanding of sys design & development, technology support, & data processing standards; assess impact of technology support organizations on system's technical direction; provide consultative services for technical business opportunities; train business units on new or changed products, processes, & services; assist jr staff in performance of these duties. Min. req's: Master's degree in Computer Science, Engineering, or related field, no exp req'd; will also accept Bachelor's degree plus 5 yrs progressive exp in the field. Must have unrestricted authorization to work in U.S. M-F, 9:00AM - 5:00PM, 40+ hrs/wk. Salary range: \$95,600 - \$119,500/yr. An EOE. Send 2 copies of resume to Case No. 200115876, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

**ASTECH CONSULTANT**

Responsible for providing technical support to customers. Resolve customer problems as required and provide on-site technical support. Research problems and issues on behalf of customer. Maintain customer's computer systems and review customer's support requirements to provide solutions. Analyze customer systems and support equipment as required by customer. Write status reports to management and customers. Travel to customer sites as required. Knowledge of Tandem based hardware and Stratus software. 40 hours per week. 8am to 5:00pm. \$80,625.12/year. Bachelor's degree or equivalent in Computer Science/Engineering or related field. Equivalent work experience or a combination of work exp/education may be accepted in lieu of degree requirement. Three years of experience in job offered or related occupation. Must have proof of legal authority to work in the United States. Send your resume to: Madhavi Bhadbhade, Nebraska Workforce Development, Department of Labor, P.O. Box 94600, Lincoln, NE 68509-4600. Please refer to Job Order #SBAH5-KARTU-19521.

**COMPUTER/IT**

Associate Staff Software Engineer - Req. Master's degree in Computer Eng., Computer Science, or Electrical Eng. & 2 years' exp. in the job offered or 2 years' exp. in systems integration & coding of DOCSIS (Data Over Cable Service Interface Specification) 1.0 & 1.1 applications on a real-time embedded system for digital set-top boxes. All stated exp. must incl. integration of up-converters, RF combiners, & vector signal analyzers; & coding of baseline privacy keying encryption protocols. Lead conceptualization, definition, and design of new services and clients on network & application processors for digital video systems. Coordinate teams engaged in design and implementation of DOCSIS 1.0 and 1.1 cable modem applications on a real-time embedded system on Digital Video Recorder set-top boxes, accounting for operational parameters resulting from systems integration & coding limitations. 40 hrs/wk. 8:00 a.m.-5:00 p.m. Apply with resume to: Scientific-Atlanta, Inc., c/o: Ellen Queen, 5030 Sugarloaf Parkway, Lawrenceville, GA 30044. Please reference job #5321.

**Software Engineers Needed**

Design and develop ENOVIA'S Application Software. ENOVIA is a leader in developing and implementing innovative Digital Enterprise Solutions. ENOVIA'S Cutting Edge solutions include WEB based Digital applications designed to help manufacturers create, manage, communicate and digitally simulate all aspects of the product life cycle.

Requirements for various level positions include degrees in Computer Science, Engineering, or a closely related field. Experience preferred in Java/C++, SQL, Windows NT and Unix.

ENOVIA offers a competitive salary and comprehensive benefits package. Qualified applicants please forward your resume and salary requirements to: [enoviah@enovia.com](mailto:enoviah@enovia.com). EOE

Calif. based IT co. has openings at its Torrance office and unanticipated client sites across the US for Programmer/Analysts, Software Engineers and Business Development Consultants. Send resume with salary history and requirements to RJT Compuquest, 23430 Hawthorne Blvd., #305, Torrance, CA 90505 Attn: Suzanne

Performing software engineering design, test, analysis and implementation of various computer applications for Web based architecture wrt financial industry. Extensively use of JAVA with EXTRICITY on the web servers like WEBSPIRE and IPLANET. The databases like ORACLE 8i and DB2 should be used to retrieve data. Should work with operating systems like UNIX and WINDOWS NT etc. Must have min. 5 years of experience, 40 hr/wk, competitive salary. Resumes should be sent to 226 Paul St #204, Pittsburgh, PA-15211. WEB#300717.

**NEED TO HIRE?  
START WITH US!**

Call your ITcareers Sales Representative or Nancy Percival at 1-800-762-2977.

# THE WORLD OF WORK IS CHANGING EVERY WEEK.



LUCKILY, WE ARE TOO!  
For the most up to date  
opportunities and coverage,  
stay tuned in with us.

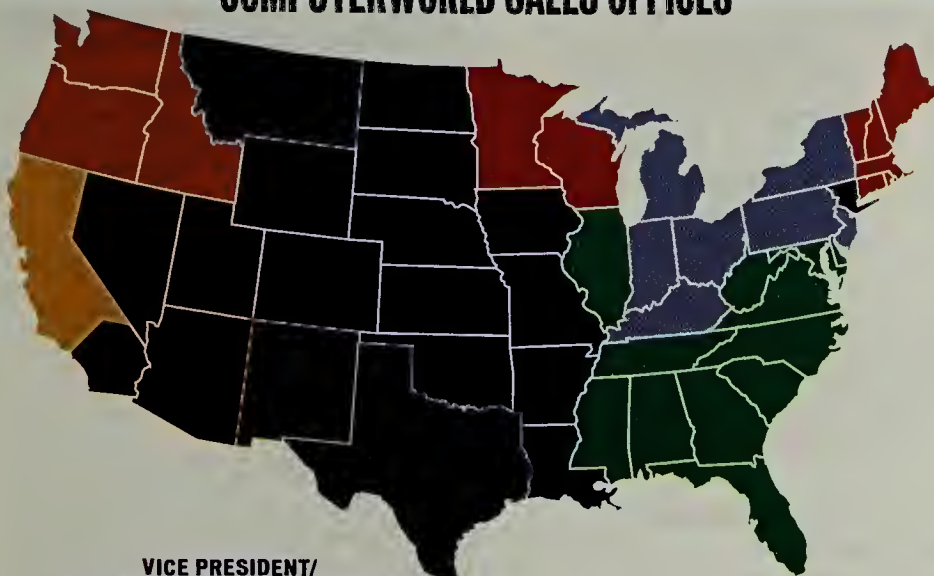
# IT CAREERS

where the best get better

**1-800-762-2977**



## COMPUTERWORLD SALES OFFICES

VICE PRESIDENT/  
NATIONAL ASSOCIATE PUBLISHER

Matthew J. Sweeney  
(508) 271-7100  
Fax: (508) 270-3882

## SALES BUSINESS MANAGER

Laureen Austermann  
(508) 820-8522  
Fax: (508) 270-3882

## KEY ACCOUNTS

VICE PRESIDENT: Linda Holbrook;  
FIELD MARKETING ASSOCIATE: Elisa Phillips, 177 Bovet  
Road, Suite 400, San Mateo, CA 94402 (650) 357-0200  
Fax: (650) 524-7000

## NORTHWESTERN STATES

ACCOUNT DIRECTOR: Kevin Ebmeyer; SALES OPERATIONS MANAGER: Emmie Hung, 177 Bovet Road, Suite 400, San Mateo, CA 94402, (650) 357-0200, Fax: (650) 524-7000

## BAY AREA

ACCOUNT DIRECTORS: Debbie Sorich, Kevin Ebmeyer; SENIOR SALES ASSOCIATE: Christy Berger; SALES OPERATIONS MANAGER: Emmie Hung, 177 Bovet Road, Suite 400, San Mateo, CA 94402, (650) 357-0200, Fax: (650) 524-7000

## SOUTHWESTERN STATES

ACCOUNT DIRECTOR: Bill Hanck (949) 442-4006, Fax: (949) 476-8724; SENIOR SALES ASSOCIATE: Jean Dellarobba, 18831 Von Karman Avenue, Suite 200, Irvine, CA 92612, (949) 442-4053, Fax: (949) 476-8724

## EASTERN CENTRAL STATES/NEW JERSEY

ACCOUNT DIRECTOR: Maureen Grady; FIELD MARKETING ASSOCIATE: John Radzinski, Mack - Cali IV, 61 South Paramus Rd., 3rd Floor, Paramus, NJ 07652, (201) 587-0090, Fax: (201) 587-9255, (201) 587-1289

## CENTRAL STATES

ACCOUNT DIRECTOR: Tom Buckley, 3602 Green Emerald Terrace, Austin, TX 78739, (512) 280-7484, Fax: (512) 280-7104; SENIOR SALES ASSOCIATE: Jean Dellarobba, 18831 Von Karman Avenue, Suite 200, Irvine, CA 92612, (949) 442-4053, Fax: (949) 476-8724

## NEW ENGLAND STATES/MINNESOTA/WISCONSIN

ACCOUNT DIRECTOR: Laurie Marinone; FIELD MARKETING ASSOCIATE: Deborah Crimmings, 500 Old Connecticut Path, Framingham, MA 01701, (508) 879-0700, Fax: (508) 270-3882

## METRO NEW YORK

ACCOUNT DIRECTORS: John Bosso, Maureen Grady; FIELD MARKETING ASSOCIATE: John Radzinski, Mack - Cali IV, 61 South Paramus Rd., 3rd Floor, Paramus, NJ 07652, (201) 587-0090, Fax: (201) 587-9255, (201) 587-1289

## SOUTHEASTERN STATES/ILLINOIS

ACCOUNT DIRECTOR: Lisa Ladle-Wallace, 5242 River Park Villas Dr., St. Augustine, FL 32092, (800) 779-5622, Fax: (800) 779-8622; FIELD MARKETING ASSOCIATE: Deborah Crimmings, 500 Old Connecticut Path, Framingham, MA 01701, (508) 879-0700, Fax: (508) 270-3882

COMPUTERWORLD  
HEADQUARTERS

500 Old Connecticut Path, P.O. Box 9171  
Framingham, MA 01701-9171  
Phone: (508) 879-0700  
Fax: (508) 875-4394

## VICE PRESIDENT/CIO

Rick Broughton  
(508) 620-7700

## VICE PRESIDENT/EDITOR IN CHIEF

Maryfran Johnson  
(508) 620-7724

EXECUTIVE VICE PRESIDENT/  
STRATEGIC PROGRAMS

Ronald L. Milton  
(508) 820-8661

## EXECUTIVE VICE PRESIDENT

Matthew C. Smith  
(508) 820-8102

VICE PRESIDENT/  
NATIONAL ASSOCIATE PUBLISHER

Matthew J. Sweeney  
(508) 271-7100

INTERNATIONAL  
DATA GROUP

## CHAIRMAN OF THE BOARD

Patrick J. McGovern

## CEO

Pat Kenealy

COMPUTERWORLD is a business unit of IDG, the world's leading technology media, research and event company. IDG publishes more than 300 magazines and newspapers and offers online users the largest network of technology-specific sites around the world through IDG.net (www.idg.net), which comprises more than 330 targeted Web sites in 80 countries. IDG is also a leading producer of 168 computer-related events worldwide, and IDG's research company, IDC, provides global market intelligence and advice through 51 offices in 43 countries. Company information is available at www.idg.com.



**imagine  
the possibilities**

**...more than  
1.8 million\* of them**

# INTRODUCING MarketPlace from COMPUTERWORLD

Every other week, you'll reach more than 1.8 million\* IT professionals with your ad in **Computerworld's MarketPlace**. With a variety of sizes—from a traditional column inch ad to a full-page, four-color format ad—and frequencies, MarketPlace offers several unique and affordable options for your company to showcase its products and services.

For more information on these opportunities, contact Richard Black at (800) 622-1108, x6596 or [rblack@computerworld.com](mailto:rblack@computerworld.com).

\*IntelliQuest CIMS v9.0, October 2002, Average Issue Audience



# How to Contact COMPUTERWORLD

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

**Maryfran Johnson**, editor in chief  
(508) 820-8179

## DEPARTMENT EDITORS

**Don Tennant**, News editor ..... (508) 620-7714  
**Craig Stedman**, assistant News editor ..... (508) 820-8120  
**Julia King**, Management editor ..... (610) 532-7599  
**Jean Consilvio**, assistant Management editor ..... (508) 820-8562  
**Tommy Peterson**, Technology editor ..... (508) 620-7729  
**Mitch Betts**, director, Knowledge Centers ..... (301) 262-8243

## REPORTERS

**Bob Brewin**, mobile computing/wireless; Intel PCs and servers; health care ..... (505) 425-3551  
**Matt Hamblen**, networking; network systems management; e-commerce ..... (508) 820-8567  
**Thomas Hoffman**, information economics; IT investment and management issues; careers/labor ..... (845) 988-9630  
**Lucas Mearian**, financial services; storage; IT management ..... (508) 820-8215  
**Linda Rosencrance**, general assignment; transportation/carriers ..... (508) 628-4734  
**Carol Sliwa**, Microsoft; Web services technologies; application development; retail industry ..... (508) 628-4731  
**Marc L. Songini**, ERP; supply chain; CRM; databases; data warehousing; EAI; CA ..... (508) 820-8182  
**Patrick Thibodeau**, enterprise systems; outsourcing and immigration issues; corporate antitrust issues ..... (202) 333-2448

**Dan Verton**, federal/state government; legislation; critical-infrastructure security; travel ..... (703) 321-2277  
**Jaikumar Vijayan**, Corporate security/privacy issues; manufacturing ..... (630) 978-8390  
**Todd R. Weiss**, general assignment; Linux; messaging/collaboration ..... (717) 560-5255

## OPINIONS

**Patricia Keefe**, editor at large ..... (508) 820-8183  
**Mark Hall**, opinions editor ..... (503) 391-1158  
**Frank Hayes**, senior news columnist ..... (503) 252-0100

## FEATURES EDITORS

**Ellen Fanning**, special projects editor ..... (508) 820-8204  
**Robert L. Mitchell**, technology evaluations editor ..... (508) 820-8177  
**Gary H. Anthes**, editor at large ..... (703) 536-9233

## COMPUTERWORLD.COM

**Tom Monahan**, online director ..... (508) 820-8218  
**Sharon Machlis**, managing editor/online ..... (508) 820-8231  
**Ken Mingis**, online news editor ..... (508) 820-8545  
**Marian Prokop**, online editor at large ..... (508) 620-7717  
**David Ramel**, e-mail newsletter/online editor at large ..... (508) 820-8269  
**Brian Sullivan**, online editor at large ..... (508) 620-7780  
**John R. Brillion**, associate art director ..... (508) 820-8216  
**David Waugh**, associate art director ..... (508) 820-8142

**Keoley Guillaume**, marketing associate/researcher  
**Peter Smith**, Web development manager  
**Kevin Gerich**, **Mark Savory**, Web developers  
**Bill Rigby**, associate Web developer  
**Matthew Moring**, graphics designer

## RESEARCH

**Mari Keefe**, research manager  
**Oussie Wilson**, research associate

## COPY DESK

**Jamie Eckle**, managing editor/production ..... (508) 820-8202  
**Michele Lee DeFilippo**, assistant managing editor/production ..... (508) 820-8126  
**Bob Rawson**, **Monica Sambataro**, senior copy editors  
**Eugene Demaitre**, **Mike Parent**, copy editors

## GRAPHIC DESIGN

**Stephanie Faucher**, design director ..... (508) 820-8235  
**April O'Connor**, associate art director  
**Julie Quinn**, graphic designer  
**Susan Cahill**, graphics coordinator  
**John Klossner**, cartoonist

## ADMINISTRATIVE SUPPORT

**Linda Gorgone**, office manager ..... (508) 820-8176  
**Cheryl Dudek**, administrative assistant ..... (508) 820-8178

## CONTRIBUTING COLUMNISTS

**John Berry**, **David Foote**, **Pimm Fox**,  
**Michael Gartenberg**, **Dan Gillmor**,  
**Thornton A. May**, **David Moschella**,  
**Bart Perkins**, **Nicholas Petreley**

## CONTRIBUTING WRITERS

**Mary Brandel**, **Amy Helen Johnson**, **Russell Kay**,  
**Sami Lais**, **Kathleen Melymuka**, **Deborah Radcliff**

## GENERAL INFORMATION

### TELEPHONE/FAX

Main phone number ..... (508) 879-0700  
 All editors unless otherwise noted below  
 Main fax number ..... (508) 875-8931  
 24-hour news tip line ..... (508) 820-7718

### E-MAIL

Our Web address is  
[www.computerworld.com](http://www.computerworld.com).  
 Staff members' e-mail follows this form:  
[firstname\\_lastname@computerworld.com](mailto:firstname_lastname@computerworld.com).  
 For IDG News Service correspondents:  
[firstname\\_lastname@idg.com](mailto:firstname_lastname@idg.com).

### LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:  
[letters@computerworld.com](mailto:letters@computerworld.com).  
 Include your address and telephone number.

### MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,  
 Framingham, Mass. 01701

### SUBSCRIPTIONS/BACK ISSUES

Subscription rates: U.S., \$190/year; Canada, \$220/year; Central and South America, \$250/year; all others, \$295/year  
 Phone ..... (888) 559-7327  
 E-mail ..... [cw@omeda.com](mailto:cw@omeda.com)  
 Back issues ..... (508) 988-7590

### REPRINTS/PERMISSIONS

Contact ..... **Renee Wywadis**  
 Phone ..... (717) 399-1900, ext. 172  
 E-mail ..... [reprints@computerworld.com](mailto:reprints@computerworld.com)  
 Visit [www.reprintbuyer.com](http://www.reprintbuyer.com) to obtain quotes and order reprints online.

# COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at [www.computerworld.com](http://www.computerworld.com).

3COM CORP.	12
ALCATEL	1
ALLSTATE INSURANCE CO.	42
ALTIRIS INC.	12
AMAZON.COM INC.	36
AMERICAN BANKERS ASSOCIATION	36
AMERICAN EXPRESS CO.	26
AMR RESEARCH INC.	139
APPLE COMPUTER INC.	10
ART TECHNOLOGY GROUP INC.	25
ASCENTIAL SOFTWARE CORP.	22
AT&T WIRELESS SERVICES INC.	25/28
AVNET INC.	1
BANK OF AMERICA CORP.	36
BASKIN-ROBBINS INC.	44
BETTS USA INC.	1
BLACK & VEATCH CORP.	42
BRIGHT TRADING LLC	6
BUSINESS LAYERS INC.	25
CAP GEMINI ERNST & YOUNG	25
CAROLINA HEALTH INC.	6
CARNEGIE MELLON UNIVERSITY	32
CBS CORP.	10
CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION	14
CERTEGY INC.	10
CISCO SYSTEMS INC.	12/20
CITIGROUP INC.	36
CITRIX SYSTEMS INC.	34
COMMERCE ONE INC.	46
COVANSYS CORP.	6
CRAY INC.	19
CROSSBOW TECHNOLOGY INC.	32
CUTTER CONSORTIUM	42
CYBERNET SYSTEMS CORP.	10
OAIMLERCHRYSLER SERVICES NORTH AMERICA LLC	12
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY	32
DEFENSE INFORMATION SYSTEMS AGENCY	1
OHL SYSTEMS INC.	22
DUST INC.	32
EOCS INC.	25/28
EYE DIGITAL SECURITY	34
ELECTRONIC DATA SYSTEMS CORP.	10
EMC CORP.	16
EMPOWERED SOFTWARE SOLUTIONS INC.	10
EVANS DATA CORP.	10
EXTREME LOGIC INC.	10
FBI	6
FIDELITY INVESTMENTS	16
FORO MOTOR CO.	50
FORRESTER RESEARCH INC.	25
FORWARD CONCEPTS CO.	14
GARTNER INC.	17, 6/25/39
GATEWAY INC.	12
GENERAL MOTORS CORP.	22
GIBSON MUSICAL INSTRUMENTS	57
GREENWICH CAPITAL MARKETS INC.	43
HEALTHFORCE PARTNERS INC.	57
HEWLETT-PACKARD CO.	12/16
HUAWEI TECHNOLOGIES CO.	12

HUSSMANN CORP.	39
I2 TECHNOLOGIES INC.	16
IBM	10/12/16
IOC	20/46
INGERSOLL-RAND CO.	39
INNOVANT INC.	42
INTEL CORP.	10
INTERNATIONAL TURNKEY SYSTEMS	7
INTERNET SECURITY SYSTEMS INC.	34
INTERSAN INC.	16
JOHN J. OAVIS & ASSOCIATES INC.	42
KAISER PERMANENTE HEALTH PLAN INC.	16
LEHMAN BROS.	1
LENOING TREE INC.	42
LIFESPAN	60
LOEWS CORP.	6
LOS ANGELES INTERNATIONAL AIRPORT	14
LOS ANGELES POLICE DEPARTMENT	14
MARATHON OIL CORP.	12
MASTERCARD INTERNATIONAL INC.	6
MATRIX NETSYSTEMS INC.	7
MCOATA CORP.	25/28
MCKESSON CORP.	22
MERCURY INTERACTIVE CORP.	10
META GROUP INC.	8/10/16/58
METROWERKS INC.	10
MICROSOFT CORP.	110/12/14/20/30/31/50/57
MIT	12/32
MIT LABORATORY FOR COMPUTER SCIENCE	23
MITSUBISHI CATERPILLAR FORKLIFT AMERICA INC.	16
MORGAN STANLEY	43
MOTOROLA INC.	10/14
NAPSTER INC.	22/23/49
NATIONAL INFRASTRUCTURE PROTECTION CENTER	6

NAVAL SEA SYSTEMS COMMAND	46
NETWORK SERVICES CO.	44
NEW YORK LIFE INSURANCE CO.	22
NISHAN SYSTEMS INC.	20
NORTEL NETWORKS LTD.	1
NORTHROP GRUMMAN CORP.	16
ORACLE CORP.	8/12/25/26/34/39/44
PACIFIC GAS & ELECTRIC CO.	43
PALM INC.	10
PALMSOURCE INC.	10
PEN&INTERNET LLC	36
PEOPLESOFT INC.	25
PEROT SYSTEMS CORP.	50
PROXIM CORP.	20
REO HAT INC.	16
ROBERSON TRANSPORTATION	39
ROYAL CARIBBEAN CRUISES LTD.	1
SAP AG	44
SARVEGA INC.	36
SATYAM COMPUTER SERVICES LTD.	50
SHARP MICROELECTRONICS OF THE AMERICAS	10
SIEBEL SYSTEMS INC.	6/25
SIGNALWORKS INC.	16
SPRINT CORP.	1
STARBUCKS CORP.	44
STEINBACH CREDIT UNION INC.	20
STRATUS TECHNOLOGIES INC.	7
SUMMIT STRATEGIES INC.	1
SUN MICROSYSTEMS INC.	7/12/16/19/22
SUPPLYWORKS INC.	39
SYMBOL TECHNOLOGIES INC.	14
SYRACUSE UNIVERSITY	25
SYSTEM MANAGEMENT ARTS INC.	34
T. ROWE PRICE GROUP INC.	6
TELIVISTA CO.	6
THE 21ST SUPPLIER	39
THE LINKSYS GROUP INC.	16
THE MCGRAW-HILL COS.	16

THE PRECURSOR GROUP	7
THE READER'S DIGEST ASSOCIATION INC.	50
TIMES MIRROR CORP.	43
TRW AUTOMOTIVE INC.	50
TRW INC.	16
TUFTS-NEW ENGLAND MEDICAL CENTER INC.	50
U.S. ARMY	14
U.S. DEPARTMENT OF COMMERCE	7
U.S. DEPARTMENT OF DEFENSE	1
U.S. DEPARTMENT OF HOMELAND SECURITY	16
U.S. DEPARTMENT OF STATE	1
U.S. DEPARTMENT OF THE TREASURY	6
U.S. MARINES	46
U.S. NAVY	46
U.S. SECURITIES AND EXCHANGE COMMISSION	16
UNISYS CORP.	9/10
UNIVERSITY OF CALIFORNIA, BERKELEY	32
UNIVERSITY OF CALIFORNIA, LOS ANGELES	32
UNIVERSITY OF MANITOBA	20
VISA INTERNATIONAL INC.	42
VYTEK WIRELESS INC.	14
WELLS FARGO FINANCIAL INC.	12
WHALE COMMUNICATIONS INC.	6
WORKSPACE INC.	36
WORLDWIDE CONSORTIUM	23
WORLOCOM INC.	1
WYNHAM INTERNATIONAL INC.	6
XIOTECH CORP.	20

## ADVERTISER'S INDEX

Attachmate	33
<a href="http://www.attachmate.com">www.attachmate.com</a>	
BMC Software	19
<a href="http://www.bmc.com">www.bmc.com</a>	
Erico	45
<a href="http://www.erico.com">www.erico.com</a>	
CeBIT	18
<a href="http://www.cebit.org">www.cebit.org</a>	
Cisco	41
<a href="http://www.cisco.com">www.cisco.com</a>	
Computer Associates	4
<a href="http://www.ca.com">www.ca.com</a>	
Hewlett-Packard	9
<a href="http://www.hp.com">www.hp.com</a>	
IBM i-Series	37
<a href="http://www.ibm.com">www.ibm.com</a>	
IBM Tivoli	48, 49
<a href="http://www.ibm.com">www.ibm.com</a>	
IBM x-Series 440	35
<a href="http://www.ibm.com">www.ibm.com</a>	
Internet Security Systems	13
<a href="http://www.iss.net">www.iss.net</a>	
InterSystems Caché	24
<a href="http://www.intersystems.com">www.intersystems.com</a>	
Microsoft Agility	2-3
<a href="http://www.microsoft.com">www.microsoft.com</a>	
Microsoft IT Desktop	26-27
<a href="http://www.microsoft.com">www.microsoft.com</a>	
Mobile & Wireless World 28/39/59	
<a href="http://www.computerworld.com/mww">www.computerworld.com/mww</a>	
Nortel Networks	47
<a href="http://www.nortelnetworks.com">www.nortelnetworks.com</a>	
Oracle Corp.	60
<a href="http://www.oracle.com">www.oracle.com</a>	
SAS	17
<a href="http://www.sas.com">www.sas.com</a>	
Storage Networking World	22/23
<a href="http://www.computerworld.com/snw">www.computerworld.com/snw</a>	
StorageTek	20, 21
<a href="http://www.storage.com">www.storage.com</a>	
Sybase	11
<a href="http://www.sybase.com">www.sybase.com</a>	
Tibco	15
<a href="http://www.tibco.com">www.tibco.com</a>	
Veritas	29*
<a href="http://www.veritas.com">www.veritas.com</a>	

\*This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.



# Microsoft App Users Like Portal Plans but Want More

## Initial ties between CRM software and back-office applications due in April

BY MARC L. SONGINI  
KISSIMMEE, FLA.

**A**T MICROSOFT Corp.'s Convergence 2003 conference here last week, a half-dozen users expressed interest in a portal-style user interface that the software vendor is developing for its business applications. But some attendees said they're still looking for more functionality from Microsoft.

For example, Bill Siemering, CIO at HealthForce Partners Inc. in Seattle, said the health care provider began beta-testing the Microsoft Business Portal earlier this month. HealthForce, which runs Microsoft's Great Plains financial and accounting applications, plans to use the portal as a central spot for delivering company news and letting end users access data related to their jobs or to specific business projects, Siemering said.

One big plus of the portal software is that it's tightly integrated with the Great Plains products, Siemering said. But he added that he also wants to see Microsoft provide out-of-the-box connections between the portal and other applications, such as the customer relationship management (CRM) software it shipped in January.

### Developing Ties

As expected, Microsoft used the conference to announce the portal and to preview another upcoming software offering that's designed to boost the ability of its applications users to collaborate with their customers and suppliers [QuickLink 37030].

Mark Jensen, a group product manager at Microsoft's business solutions unit, said IT managers will be able to collapse multiple application screens into a single Web browser interface and then custom-configure the portal for different workers. End users will get direct access to applications through a single sign-on tool, Jensen said.

The first portal release, due

next month, will include full integration with Microsoft's Great Plains and Solomon applications. Ties between Great Plains and the new CRM software are being beta-tested and should be available right off the bat, Jensen said. Integration of Microsoft CRM and Solomon should follow later this year, he added.

Gibson Musical Instruments, a maker of guitars and other stringed instruments in Nashville, is a Great Plains user and has been beta-testing Microsoft Business Portal with about

a dozen users for five weeks.

Gibson is considering using the software as a general corporate portal, said Matt Mullins, the company's chief knowledge officer. But Mullins said he would also like to see Microsoft offer vertical applications tailored to his industry, plus an integrated point-of-sale system within the Great Plains suite.

As part of the Microsoft Business Network collaboration initiative, Microsoft plans to release software in June that will let companies use XML to exchange documents in electronic data interchange formats. The company said it will add Web services broker technology to the collaboration offering, but it didn't disclose a specific schedule. ▀

### NEW PRODUCTS

**Microsoft Business Portal:** Provides Web browser access to business applications and data. **Release date:** Next month, with ties to Microsoft's Great Plains and Solomon applications

**Microsoft Business Network:** Software and Web services designed to streamline collaborative applications between companies. **Release date:** June

**Great Plains 7.5:** Combines previously separate applications for managing areas such as finance and supply chain operations. **Release date:** Late next month

**Solomon 5.5:** Upgraded set of applications for midsize companies, with data integration and ease-of-use enhancements. **Release date:** By midyear

Continued from page 1

## Longhorn

Valentine said he doesn't think operating system waves can be absorbed by customers any faster than in two- to three-year cycles. That means the successor to Longhorn, code-named Blackcomb, is now loosely pegged for 2007 or 2008, he confirmed.

Those dates extend the most recent timelines that Microsoft has supplied. Until last week, company officials had been saying that Longhorn wouldn't ship before mid-2004 and that Blackcomb wouldn't ship before late 2005 or early 2006 [QuickLink 34454].

Also contrary to prior information supplied by Microsoft, Blackcomb may have both client and server releases, according to Valentine. Microsoft had indicated that Blackcomb would be for servers only, but last week Valentine said that every Windows wave has to include a desktop operating system because "we always want to demonstrate the infrastructure with improvements in our own end-user device stuff."

Valentine said a new server kernel will probably be required for the Blackcomb release, so he expects that there will be both client and server operating system releases. But he was quick to add that no commitments have been made yet and that it's too early to tell if there will be a Windows Server 2005.

To support client capabilities in Longhorn, Valentine said, minor or simple infrastructure services might be delivered as part of an optional service pack. But he said the Windows team wants to restrict service packs primarily to bug fixes.

Valentine said more exten-

sive changes will likely be delivered separately. He pointed to the real-time communications capabilities being enabled in the next version of Office as one example. He said that will spur the need for a real-time communications infrastructure involving the server operating system.

### Kernel Consistency

Any additions or changes to the Windows server operating system that coincide with the Longhorn release will be done on top of the kernel for Windows Server 2003, which is due to ship next month, according to Valentine. He said he views the server kernel as more than a memory manager and I/O subsystem; it also encompasses core services such as Active Directory and public-key infrastructure technology.

"Those things aren't going to dramatically change for the Longhorn wave," he said. "There will be some new management infrastructure that comes out in there, but that'll be overlaid on top of the server kernel."

Because the kernel won't change, customers who mi-

grate to Windows Server 2003 won't lose their investment in that operating system should Microsoft decide to release the Longhorn server operating system, Valentine said.

In November, when Microsoft announced that Longhorn would be a client-only release, an official cited the delayed shipping date for .Net Server 2003 as the impetus for that change in plans. Bob O'Brien, a group product manager in Microsoft's Windows server division, called it a "common-sense decision" based on customer feedback that Longhorn would emerge too soon after Windows .Net Server 2003.

Valentine last week called the November announcement "a bit premature," based on engineering planning.

Dwight Davis, an analyst at Summit Strategies Inc. in Boston, speculated that the changes disclosed last week could relate to new management initiatives that Microsoft also announced (see story, page 12).

"It's going to be a big initiative, sucking lots of Microsoft R&D dollars, and the operating system groups have to be aligned with that," he said. ▀

## New Windows

**CODE NAME: Whistler**  
**Client operating system:**  
**Windows XP**  
**Released: October 2001**  
**Server operating system:**  
**Windows Server 2003**  
**Due: April 24**

**CODE NAME: Longhorn**  
**Due: 2005**

**CODE NAME: Blackcomb**  
**Due: 2007 or 2008**

SOURCE: BRIAN VALENTINE, MICROSOFT CORP.



FRANK HAYES ■ FRANKLY SPEAKING

# Avoid Burnout

**H**OW BAD IS THE IT BURNOUT PROBLEM? Pretty bad. Next week, Meta Group will issue a report that says 71% of IT managers surveyed believe employee burnout is a serious issue in their organizations. Burnout means reduced productivity, higher turnover and generally lousy performance — which is exactly what corporate IT shops can't afford as budgets keep getting tighter and demands from the business side keep getting louder.

Of course, that survey doesn't actually mean that only 71% of IT shops have a serious burnout problem among their employees.

It means the other 29% haven't figured it out yet.

The statistics are part of Meta's annual "IT Staffing and Compensation Guide," which also says the way most IT departments are dealing with the problem is by offering skills-development programs. A minority are beefing up their retention programs, raising salaries, offering cash incentives and, in a few cases, even moving employees to completely new locales to try to improve morale.

Those are all good ideas. Some cost more than others, and now is a bad time to look for money to spend. Still, if you're a CIO, you should throw your support behind solving the burnout problem.

But if you're an IT manager or team leader, don't jump into this one with both feet just yet.

Before you look for money for training or raises or bonuses, first understand the problem you're trying to solve.

Burnout means people have stopped caring. That's the symptom.

But before you can make your people care again, you've got to know what they care about — what drives them.

Raises and bonuses will work for employees who are driven by the money. (That doesn't mean they're greedy, just that they keep score with those dollars, and more money makes the game more interesting.)

And training will work for employees who are driven by a desire to learn new things. That category includes a lot of IT people.

But not all of them.

Some employees are driven by challenges. They want to try things they're not sure they can do.

Some are driven by accomplishment. They get their satisfaction

from finishing the job.

Some live for variety — they want to keep trying new things. Some are happiest with stability that lets them keep getting better at what they do. Some want to do small things well. Some want to work on big projects that will change the world.

Some are driven by the desire for praise. Some are driven by loyalty. Some are driven by commitment to the team.

In each case, if they're not doing what they care about, they'll get burned out. And if you throw bonuses or training at people who are driven by challenge or variety or accomplishment or praise or team commitment, you're wasting time and money. That's not what they care about, so it won't help their burnout. One size won't fit all. It never does.

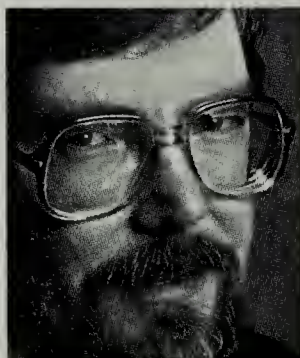
You know what drives many of your people. If you don't know, ask their former managers and team leaders. Or ask the employees themselves. Just don't assume the things that motivate you also motivate them. And don't decide they *should* be motivated by those same things.

Figure out what each of your people needs, starting with the ones showing the clearest signs of burnout. Then start looking for ways to tweak their jobs so they're getting more of what they really care about.

Yeah, that's a lot of fine-tuning. And it's a lot more touchy-feely than many IT people — in the trenches *and* in management — are really comfortable with.

But if you want to turn your burnouts around, give them what they need.

Then they can give you the performance you need. ▀



FRANK HAYES, Computerworld's senior news columnist, has covered IT for more than 20 years. Contact him at [frank\\_hayes@computerworld.com](mailto:frank_hayes@computerworld.com).

## Security First

After government auditors demand beefed-up security, this financial institution installs a push-button electronic lock on its data center doors. "The next evening, when our courier came for the nightly pickup, the driver walked in as usual," says pilot fish on duty. "Did someone leave the door open?" fish asks. "No, it was closed and locked," says driver. "But when I see one of these locks newly installed, I just try the factory default combination. It generally works."

## But It Sure Looks Great

Just after video terminals replace keypunch machines at this college, one administrator insists he needs a terminal in his office. IT pilot fish knows it's the administrator's secretary who does all the inquiries for him, but the administrator gets his terminal anyway. "About two years later, the call comes that the terminal is smoking and needs to be replaced," says fish, who checks it out. "It has burned out from being in the sleep state. He's never been logged onto the system!"



## Forward Into the Past

Customer tells this sales pilot

fish that he can't use the vendor's Web site to order products. "Your help desk told us it's because we're running Mac OS X and the browser is incompatible with your site," customer says. Frustrated fish calls Web manager and is told the customer has the story right. "But there's a work-around that has been tested and does work," Web manager says. "Downgrade all the customer's Macintosh systems to Mac OS 8.5 and they'll work fine!"

## Hose It Down

IT pilot fish and his boss are working late when they notice the lights on the dial-in server are blinking. Out of curiosity, they run a trace on the firewall and identify the traffic as coming from pornographic Web sites. "Only one person was logged in: the CEO," says fish. Sometime later, CEO brings in his laptop and asks that fish "clean it up" so he can give it to his daughter. "Guess what we found in the browser cache?" says fish. "Images from those same sites."

## Lights Out

As the IT guy for this large church, pilot fish supports several traveling pastors — including one who keeps calling about a low-battery warning on his laptop. Is the charger plugged in? fish asks the pastor during yet another call. "Yes, it is," pastor says. "And I really dislike you thinking I don't know how to operate my laptop!" Fish tries again: Is the outlet you plugged it into on a wall with a switch by the door? he asks politely. The response: Click.



**FEED THE SHARK!** Send your true tale of IT life to [sharky@computerworld.com](mailto:sharky@computerworld.com). You snag a snazzy Shark shirt if we use it. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at [computerworld.com/sharky](http://computerworld.com/sharky).



SEE FULL  
AGENDA  
at [www.mwwusa.com](http://www.mwwusa.com)

# Are wires getting in the way of your enterprise?

Attend the content-rich conference that sees an enterprise without wires



May 6-9, 2003

JW Marriott Desert Springs Resort • Palm Desert, California

## Keynote & Featured Speakers



**NANCY VICTORY**  
Asst. Secretary,  
Information &  
Communications  
U.S. Department  
of Commerce



**TONY SCOTT**  
CTO  
General Motors



**MIKE TAYLOR**  
CIO  
Todd Pacific  
Shipyards



**LEE COLAW**  
CIO/Director  
University  
Information  
Services  
Pacific Univ.



**KEN VENNER**  
VP & CIO  
Broadcom



**ANTHONY KING**  
Dir. of Software  
& Engineering  
Ventana  
Medical  
Systems



**DAVID SALZMAN**  
Program  
Manager  
United Parcel  
Service

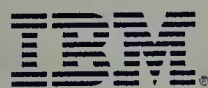


**JIM LEAKE**  
Director of  
Business  
Strategy and  
Planning  
Getronics



**STEVE POPPE**  
CIO  
Roto-Rooter

## Conference Underwriter



Official Wireless  
LAN Provider



## Conference Sponsors & Exhibitors (as of 3/17/03)

### PLATINUM SPONSORS

AVAYA



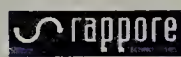
MOTOROLA

proxim  
WIRELESS NETWORKS

symbian

TOSHIBA

### GOLD SPONSORS



### CONTRIBUTING SPONSORS

Motion Computing

ORACLE

symbol

TARGUS

### SILVER SPONSORS

Microsoft

PRINTme

SHARP

### MEDIA & ASSOCIATION SPONSORS

COMPUTERWORLD

NetworkWorld

FIELD FORCE  
AUTOMATION

HANDHELD  
media group, inc.

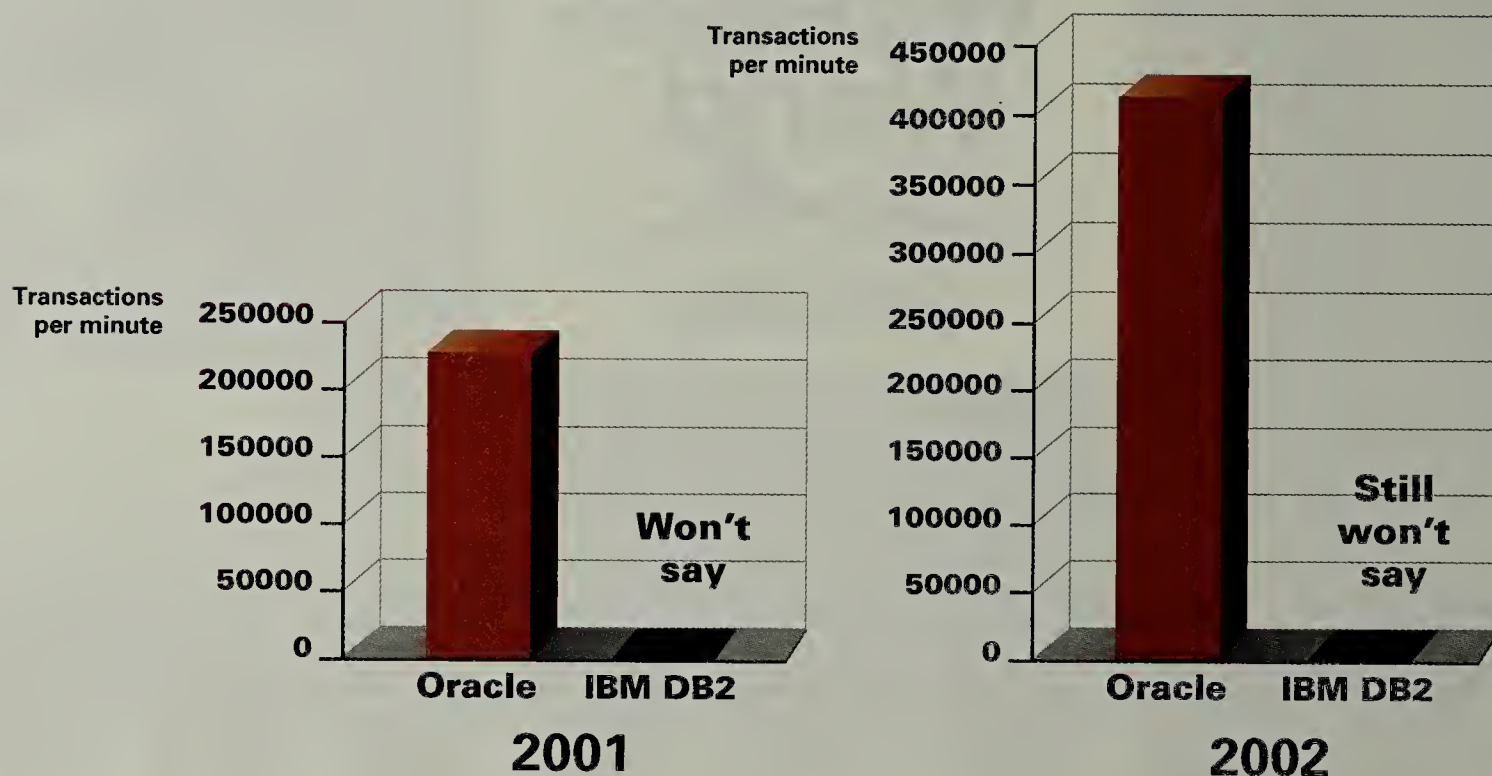
NPA

For more information, visit [www.mwwusa.com/cwp](http://www.mwwusa.com/cwp) or call 1-800-883-9090

For sponsorship information, contact Leo Leger at 1-508-820-8212 or [leo\\_leger@computerworld.com](mailto:leo_leger@computerworld.com)



# *Still* ~~What's~~ the fastest database on IBM's fastest computer



When IBM wanted to show off  
their fastest computer,  
IBM chose Oracle.  
Again.

**ORACLE®**

Source: Transaction Processing Performance Council (TPC) [www.tpc.org](http://www.tpc.org)  
As of August 14, 2002: IBM eServer pSeries 690, 403,255.46 tpmC,  
\$17.80/tpmC, available 11/22/02. IBM eServer pSeries 680,  
220,807.27 tpmC, \$29.30/tpmC, available 4/13/01

Copyright © 2002 Oracle. All rights reserved. Oracle is a registered trademark of Oracle Corporation and/or its affiliates.  
TPC Benchmark is a trademark of Transaction Processing Performance Council (TPC). Other names may be trademarks of their respective owners.

[oracle.com/ad](http://oracle.com/ad)  
or call 1.800.633.1062